GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT

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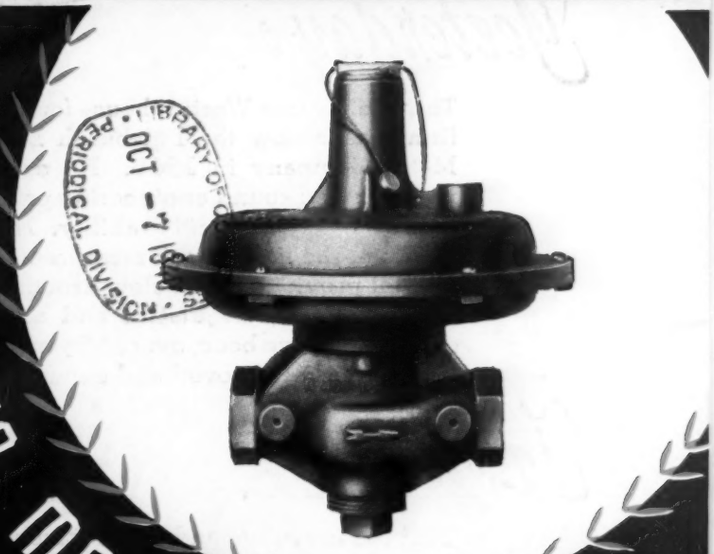


BUILT TO MATCH AN IDEAL

☆ Down through the decades REYNOLDS Engineers have worked unceasingly to build Gas Regulators safer and more accurate. Every item, every part used in Reynolds Regulators has met rigid specifications. Every Regulator built by Reynolds has been tested at the factory before it is shipped . . . which explains why for nearly half a century Reynolds has held the lead in the development of Gas Control equipment.

Reynolds maintains designing, engineering and research staffs which have at their command unequalled production facilities. Reynolds is prepared to give expert co-operation in solving Gas Control problems.

REYNOLDS

BRANCH OFFICES

423 Dwight Building
Kansas City, Missouri

2nd Unit
Santa Fe Building
Dallas, Texas

REPRESENTATIVES

Eastern Appliance Company
Boston, Massachusetts

Wm. A. Ehlers
No. 268 Park Street
Upper Montclair, N. J.

GAS REGULATOR COMPANY
ANDERSON, INDIANA, U. S. A.

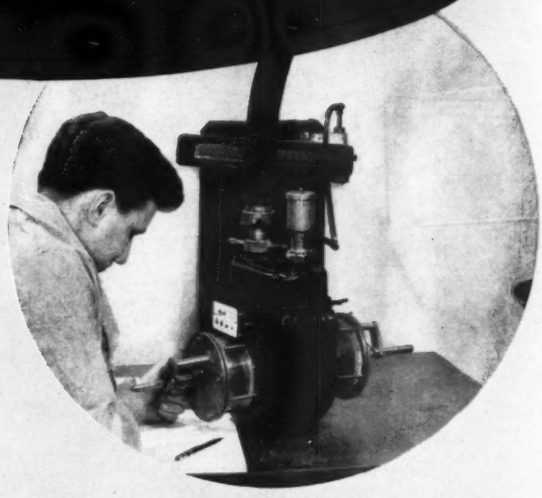
RECOGNIZED · GAS · CONTROL · SINCE · 1892

OCTOBER, 1940 ◆ ◆ 25 CENTS

Research
PROMOTES INDUSTRIAL PROGRESS

Yesterday:

The late George Westinghouse founded the firm that is now the Pittsburgh Equitable Meter Company in 1886. He combined research and sound engineering principles with a masterful inventive ability. His early efforts in the field of gas measurement and control provided the nucleus around which EMCO Meters, Regulators and accessory equipment have been, over a 50 year period, continuously improved and expanded.



Today:

That the inventive and development heritage of the founder has been perpetuated is readily apparent in the accomplishments of the EMCO organization to date. As various measurement and control needs arose in the expanding gas industry, EMCO engineers and researchers were able to provide the equipment to fill them. Such outstanding developments as the EMCO Type 38 Orifice Meter, the EMCO-RECTOR, the EMCO-McGaughy Integrator, the EMCO "1001" Regulator, and the EMCO Pilot Loading Regulator are today available to meet the current requirements of the industry. Many innovations and improvements in the construction of older basic products have been made to meet today's demands for more accurate measurement and control. Every aid of modern science is being utilized to provide the best possible value.

Tomorrow:

The wonders of tomorrow will come from the work of today's scientists. Already in the gas industry, future problems involving longer lines, higher pressures and heavier loads are being studied. In EMCO laboratories and on EMCO drawing boards are now being evolved the measurement and control equipment which will be needed to serve the expanding demands of this great industry. In addition to company operated laboratories, the Pittsburgh Equitable Meter Company supports a meter fellowship at the world-renowned Mellon Institute. Scientists here are constantly searching for better metering methods and materials. The results of such research are incorporated in EMCO products. Search and research are used to maintain leadership.

PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE CO.
NEW YORK · BUFFALO · PHILADELPHIA · KANSAS CITY · TULSA · LOS ANGELES
Main Offices - PITTSBURGH, PA
DES MOINES · CHICAGO · COLUMBIA · MEMPHIS · OAKLAND · HOUSTON

Wilcolator ANNOUNCES THE RANGEMASTER

HOW IT WORKS—

The new Wilcolator Rangemaster tells instantly and at a glance just what's going on inside the oven. Three models of Rangemaster are available for your selection.

Model A. TEMPERATURE INDICATION. Flashes the signal light immediately when oven is lighted. The light remains "on" until the selected temperature is reached. The light then goes out as indication that the oven is ready for use.

Model B. BURNER INDICATION. Provides complete indication of burner ignition. The pilot light flashes "on" when the oven burner lights and stays "on" until oven burner valve is turned off.

Model C. TEMPERATURE and BURNER INDICATION. Combines both features of Model A and B.

Illustrated is a typical installation of the Rangemaster. Pilot lights are concealed behind the panel and give a diffused glow through a translucent window. Use of colored lights gives a spectacular effect and perfect demonstrations.

Watch how women customers go for these sensational new features. Watch them sell more ranges for you!

DRAMATIC NEW SALES FEATURES FOR THE GAS RANGE OF TOMORROW!

Again Wilcolator pioneers in the oven control field—with a new improvement that means extra safety . . . greater convenience . . . new sales features!

Think of it! A gas range that flashes a signal light when the oven burner is lighted and stays "on" until the dial temperature is reached. *Plus* a second pilot light that flashes "on" when the burner lights and stays "on" as long as the oven is in use. Here are features you can dramatize fully—simple, practical temperature indications your customers can't resist!

You'll find the Wilcolator Rangemaster on many new 1941 gas ranges. So tie in. Above all—*specify* the Wilcolator Rangemaster on your new models.

IMPORTANT

Wilcolator's consumer advertising gets under way in October "Good Housekeeping." Write for the 5 free sales helps.

THE WILCOLATOR CO.

NEWARK · NEW JERSEY

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GAS

REG. U. S. PATENT OFFICE

Sixteenth Year of Publication

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Panhandle Eastern selects NATIONAL SEAMLESS PIPE

for new 105-mile looping project

MUCH of the original line and subsequent loops of Panhandle Eastern's line across Texas, Oklahoma, Kansas, Missouri, and Illinois were constructed of NATIONAL Seamless Pipe. Now, because these original installations have given such complete satisfaction, NATIONAL Seamless is this company's selection for all 105 miles of its present looping program.

You've probably noticed in reports of recent gas line projects that NATIONAL Seamless Pipe is the usual specification. To every pipe line engineer who has worked with this pipe, the reasons for this popularity are plain. NATIONAL Seamless is "Walls Without Welds." It has no long line of potential weakness. Pierced from solid billets of steel, then precision-rolled to size, it has high wall strength and continuous uniformity throughout. No other pipe is better qualified to handle gas under pressure. It is safe because it is shatter-proof. It is easily installed because it is readily handled. It keeps maintenance costs down, because it is strong and uniform. Write today for complete data.

ROUGH TERRAIN *like this presents problems to any line pipe crew. But* NATIONAL *Seamless keeps troubles to a minimum, helps keep the job moving along on schedule, because of its uniform wall strength and adaptability.*

← COATING *the pipe to retard corrosion. Sections located in corrosive soils were given this treatment. Here, the smooth, clean surface of* NATIONAL *Seamless Pipe is a valuable asset.*

→ MOVING *a long section of* NATIONAL *Seamless Pipe 24" O.D., to the trench. To stand up under field bending and rough treatment during installation, pipe has to be strong and uniform—two qualities in which* NATIONAL *Seamless excels.*

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Export Company, New York

UNITED STATES STEEL

The ONE Trencher that Really FITS THE JOB— CLEVELAND "BABY DIGGER"

FOR GAS DISTRIBUTION WORK

WATCH YOUR COSTS GO DOWN

THE FOLLOWING CLEVELAND-PIONEERED FEATURES TELL WHY——

• Weighs less than 5 tons. • Less than 5 feet in overall width. • 320 cubic inch engine. • 4 speed and reverse engine transmission, plus 8 speed digging transmission, afford 32 instantly available digging speeds varying from less than 1 foot to over 32 feet per minute. • Strength and dependability through supreme quality, rather than bulk and weight. • Fast maneuvering through differential-brake steering. • Well-balanced weight, concentrated *low*. • All steel throughout. • Over 80 Anti-Friction bearings. No babbitt bearings. • Frame, boom and buckets of high-strength alloy steel. • All gears enclosed in grease-sealed steel housings, running in oil. • Full range of ditch sizes, 10½" to 23" widths optional——5'6" depth. • Truck speed transportation on special trailers.

MATCHLESS SPECIFICATIONS, THEREFORE, MATCHLESS PERFORMANCE

Write for Details Today

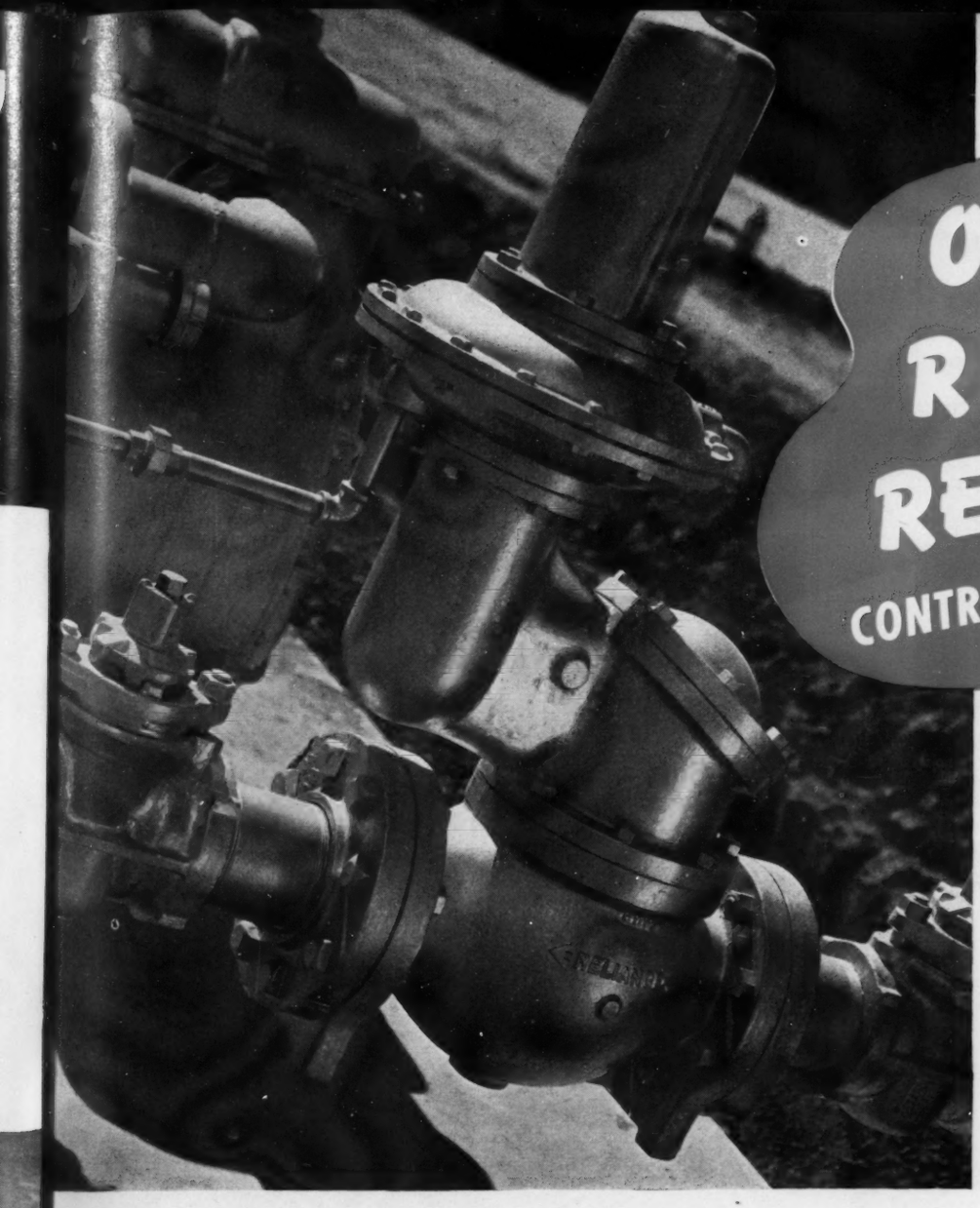
THE CLEVELAND TRENCHER COMPANY

"Pioneer of the Small Trencher"

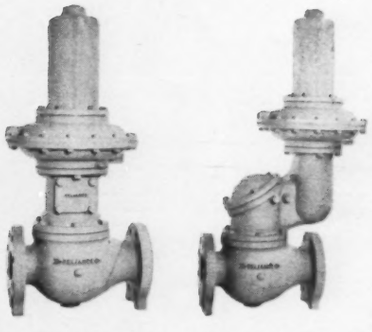
Manufacturer of A Complete Line of Wheel and Ladder Type Trenchers—— Backfillers—— Pipe-Cranes and Mechanical Tampers.

20100 ST. CLAIR AVENUE • CLEVELAND, OHIO

CLEVELANDS



ONE RELIANCE REGULATOR CONTROLS AN ENTIRE SYSTEM



Reliance CBV High Pressure Regulators are made in sizes from 2" to 10" inclusive in both direct connected and offset connected types, spring loaded, weight loaded or pilot controlled. Send for new Bulletin No. 50.

The new Walt Disney Studios at Burbank, California, are located on a 55-acre plot. Natural gas pressure at the property line varies from 20 to 60 pounds. A 4" CBV-201 Reliance Spring Loaded Offset Connected Regulator reduces the distribution pressure to 10 pounds. Other gas burning appliances on the property are protected by Reliance Regulators of the proper type and size. Boilers are served by 2" Reliance CBV Regulators. Some appliances use Reliance Type H low pressure Service Regulators.

WHY GAS COMPANIES PREFER RELIANCE REGULATORS

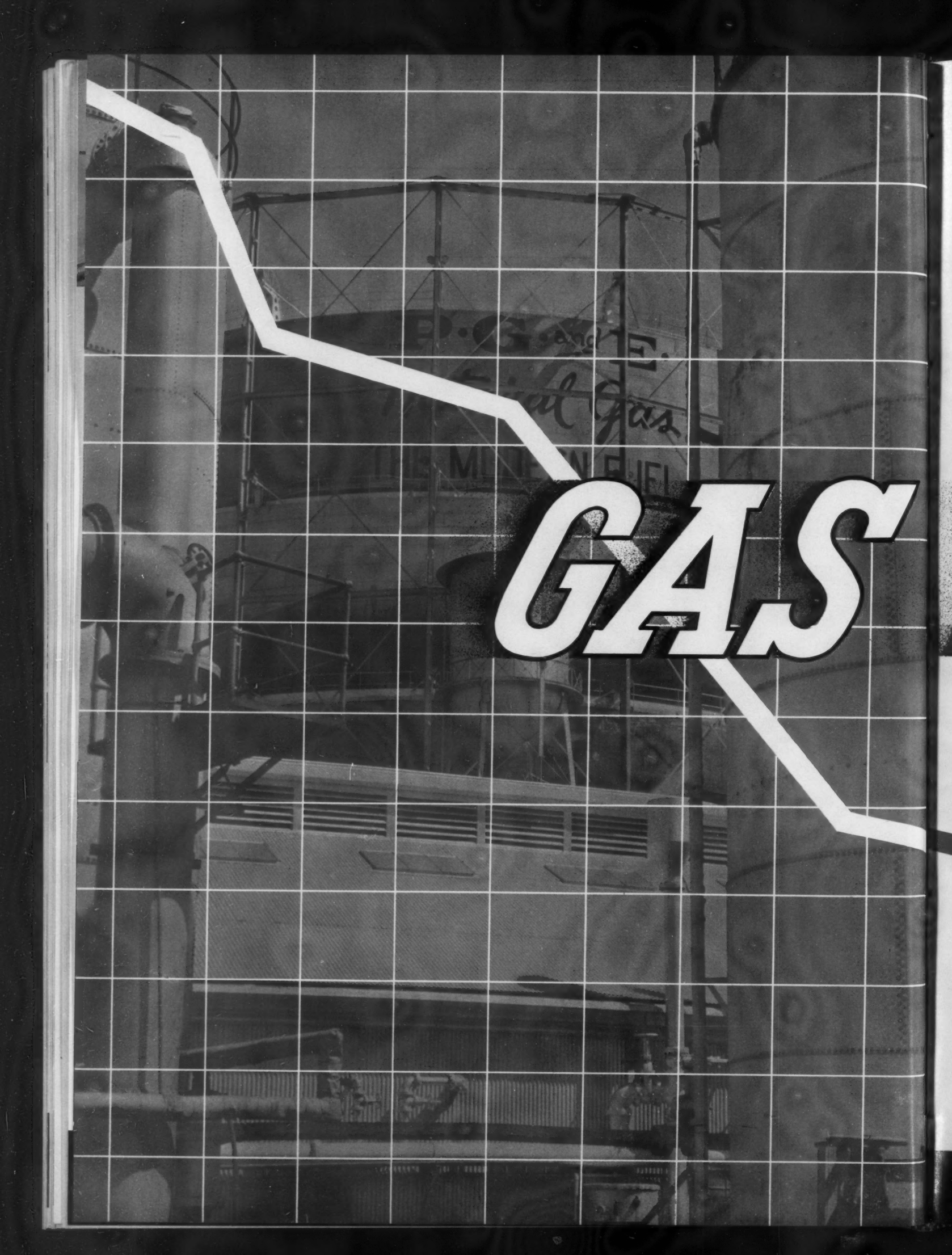
1. Greater capacity than other regulators, same size.
2. Accessibility of valve seats without removal of regulator from the line.
3. Low lock-up under adverse conditions.
4. Uniform outlet pressure under variable inlet pressure and load demands.
5. Freedom from service expense.

RELIANCE REGULATORS

REGULATORS YOU CAN RELY ON — RELIANCE

RELIANCE REGULATOR CORPORATION

1000 Meridian Ave. • Alhambra, Calif.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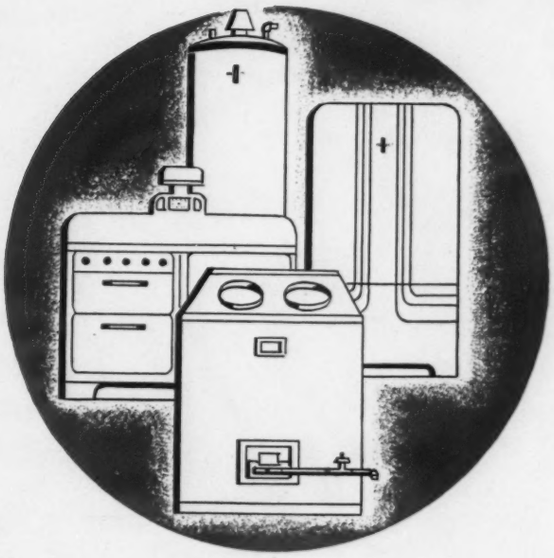


RATES GO DOWN Again!

AND APPLIANCE SALES GO UP!

Yes—Mr. Dealer—you can count on it! After every one of our five rate reductions during the past ten years, the sale of water heaters, ranges, furnaces and other gas appliances has shown a sizeable increase. And there's no reason why it shouldn't happen this year—particularly as our current $3,000,000 reduction is the largest yet. Resolve now that you're going to merchandise this rate cut for your own benefit. You can do it easily because this time the bulk of the saving goes to our so called "minimum" customers—a large group numerically, and the very people who are most interested in a sales appeal based on economy of operation. Remember, too, that "reduced gas rates" make a ringing headline for your appliance advertisements, so take advantage of the news value in our current rate cut to attract more readers. The more readers, the more customers!

PACIFIC GAS AND ELECTRIC COMPANY

It stays tight

When changes in operating requirements of gas distribution systems called for better joints, cast iron pipe makers adapted the time-tried "stuffing-box" principle to the construction of a leak-proof mechanical joint. Today mechanical-joint cast iron pipe, as developed by our members, has proved its efficiency in hundreds of installations. It is rapidly becoming standard construction in gas distribution systems.

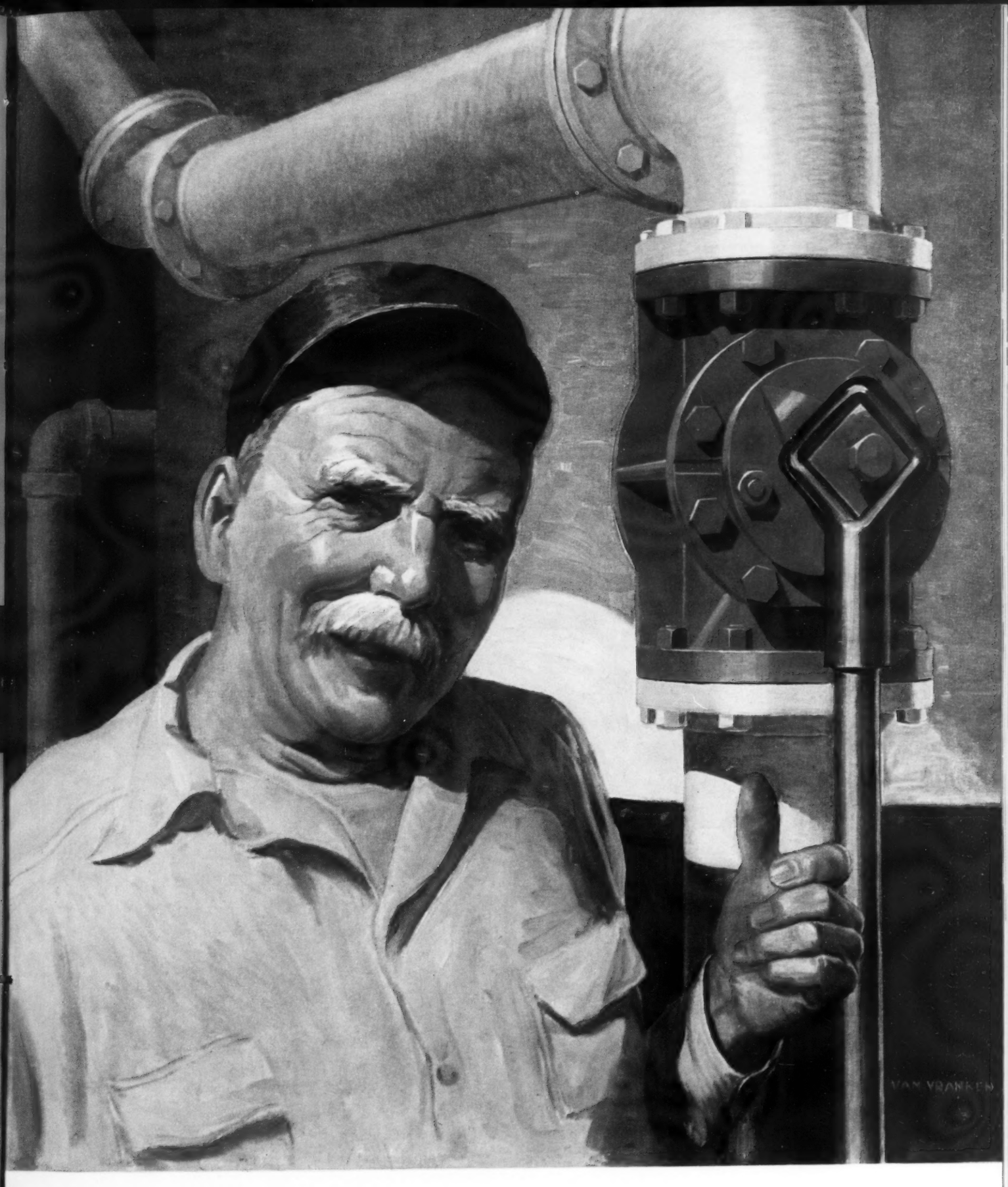
Look for the "Q-Check" registered trade mark. Cast iron pipe is made in diameters from 1¼ to 84 inches.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER, 1013 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

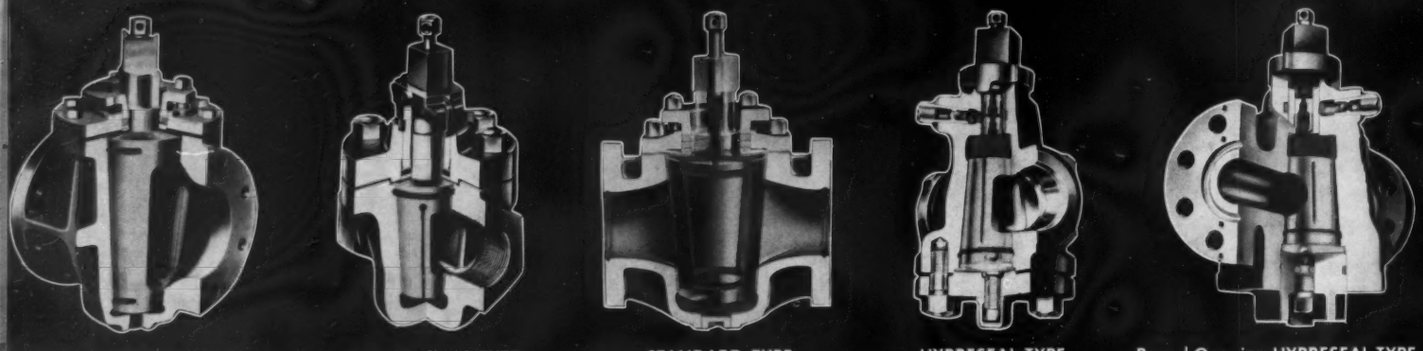
CAST IRON PIPE

THE STANDARD MATERIAL FOR UNDERGROUND MAINS

Assembling any of the mechanical joints made by CIPRA members is a simple, swift operation with common labor and a single tool. These joints vary in design but are all based on the stuffing-box principle and they are all bottle-tight.



"Hasn't leaked in 15 years—it's a NORDSTROM*"*



The all-service valves

LOWEST-PRICED—in terms of service!

USE GENUINE NORDSTROM STICK LUBRICANTS

Specially compounded lubricants with plastic properties are available in stick form for Nordstrom Valves. These have been developed by constant research and test. Nordstrom Plastic Lubricants vary in accordance with conditions to which the valve is subjected. For full details ask for Lubricant Manual, Bulletin V-105.

There are two primary factors to consider in the selection of a valve: 1. Its *safety.* 2. Its *cost in service.*

On a gas line, or on a hazardous chemical line, or on a producing oil hook-up, for instance, *safety* must be given first consideration. Will the valve always open or close easily; is it free from corrosion; will it hold the pressure?

If it isn't everlastingly *safe,* a valve isn't economical at any cost, no matter how little its purchase price.

A single valve failure can cause thousands of dollars in material loss; to say nothing of the personal liability hazard. Safety is the factor by which the Nordstrom Valve has won its reputation. Its inherent stability and leak-resistant principle assure 100% safety.

Compare the cost of Nordstrom Valve service. It's the lowest of any valve, without exception. Some operators figure the average cost of ordinary valve upkeep at approximately $5.00 per month. The cost of Nordstrom upkeep is practically nil.

Keep upkeep down with Nordstroms

Nordstrom LUBRICATED VALVES

Sealdport Lubrication

MERCO NORDSTROM VALVE COMPANY—*a Subsidiary of* Pittsburgh Equitable Meter Company

WORLD'S LARGEST MANUFACTURERS OF LUBRICATED PLUG VALVES; GASOLINE, OIL & GREASE METERS

Main Offices: 400 Lexington Ave., Pittsburgh, Penna.

BRANCHES: New York City, Buffalo, Philadelphia, Columbia, Memphis, Chicago, Kansas City, Des Moines, Tulsa, Houston, Los Angeles, Oakland.

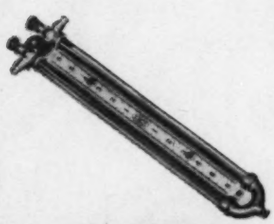
CANADIAN Licensees: Peacock Bros., Ltd., Montreal. • *EUROPEAN Licensees:* Audley Engineering Co., Ltd., Newport, Shropshire, England

PRODUCTS: Nordstrom Lubricated Valves; Air, Curb and Meter Cocks • Nordstrom Valve Lubricants • EMCO Gas Meters • EMCO-McGaughy Integrators EMCO Regulators • Pittsburgh Meters for Gasoline, Grease, Oil, Water and other Liquids • Raybould Couplings • Stupakoff Bottom Hole Gauges

Connelly IRON SPONGE

for dependable purification service

A patented product of extra high capacity — backed by 64 years' experience in the gas purification field — and guaranteed to meet every requirement efficiently and economically. Supplied either as concentrate for mixing or ready to use prepared with all chip filler — half chips and half shavings — or all shavings. Hundreds of users know that Connelly Iron Sponge can be depended upon for unusually long life — remarkable revivifying properties — and low maintenance expense.

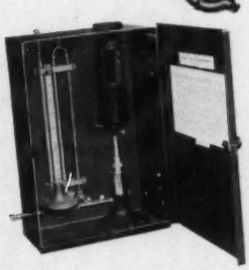


CONNELLY INSTRUMENTS

U-Gauges or Manometers for portable or stationary use. Tubes of unbreakable glass substitute, threaded to make pressure proof joint without gaskets. Needle valves at top may be closed to retain fluid for portable use. Made with or without valves in a wide range of sizes.

Mercury Pressure Gauge — single column type for stationary or portable use.

H_2S Tester — providing quick, accurate tests in a jiffy using dry pretreated paper discs.



CALOROPTIC BTU INDICATOR

A constant visual BTU indicator designed to determine the heat value of any kind of gas. Reading given directly in BTU without appreciable long-time lag, corrections or calculations. Can be installed in a permanent position or used portably to check BTU value at any point in the system. Distant alarm and indicator attachments available.

CONNELLY BACK PRESSURE VALVES

Made in a wide range of sizes to meet every requirement. Extremely sensitive, they provide a positive check against back pressure, yet exert minimum resistance to flow. Flap may be removed for cleaning and inspection without removing valve from line.

CONNELLY ENGINEERING SERVICE

Connelly engineers have been serving the gas industry for more than 64 years and their unbiased recommendations on matters pertaining to purification, control and distribution have been responsible for remarkable savings in many well-known plants. Send us samples of your purification material for testing and give us details of your control and distribution problems. We will gladly make an analysis and submit our findings without cost or obligation.

Write for Bulletins

CONNELLY IRON SPONGE & GOVERNOR CO.

CHICAGO, ILL. ELIZABETH, N. J.

Two Units for Proof...

10,600-hp Since!

Southern Natural Gas Company first installed two Type G-MV compressors in its Selma Station . . . for actual proof of claims like these:

- Foundation, housing, and transportation costs cut to a minimum by V-angle design!
- Twice the horsepower in the same space occupied by "straight-in-line" angle units!
- Higher engine efficiency, lower maintenance costs, through oil-cooled pistons!
- Longer life and fewer shutdowns through rugged construction and Meehanite Metal!
- High fuel economy, equal load-balance among power cylinders, quiet valve operation, through Silent-Scot fuel injection!

On the performance of those first two units, Southern Natural has since ordered 10,600 Type G-MV horsepower!

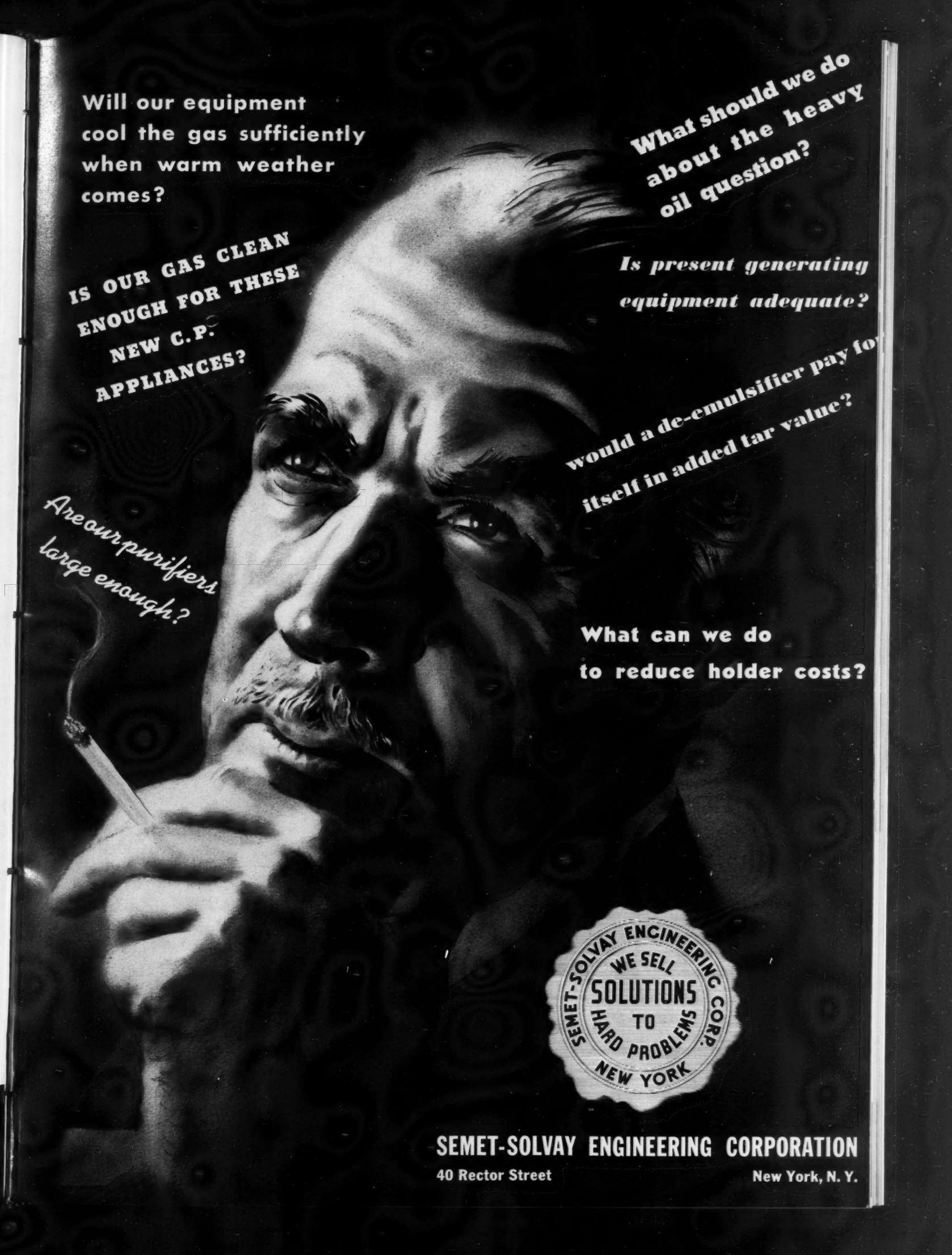
Get *all* the facts . . . write for catalog G-MV!

THE COOPER-BESSEMER CORPORATION

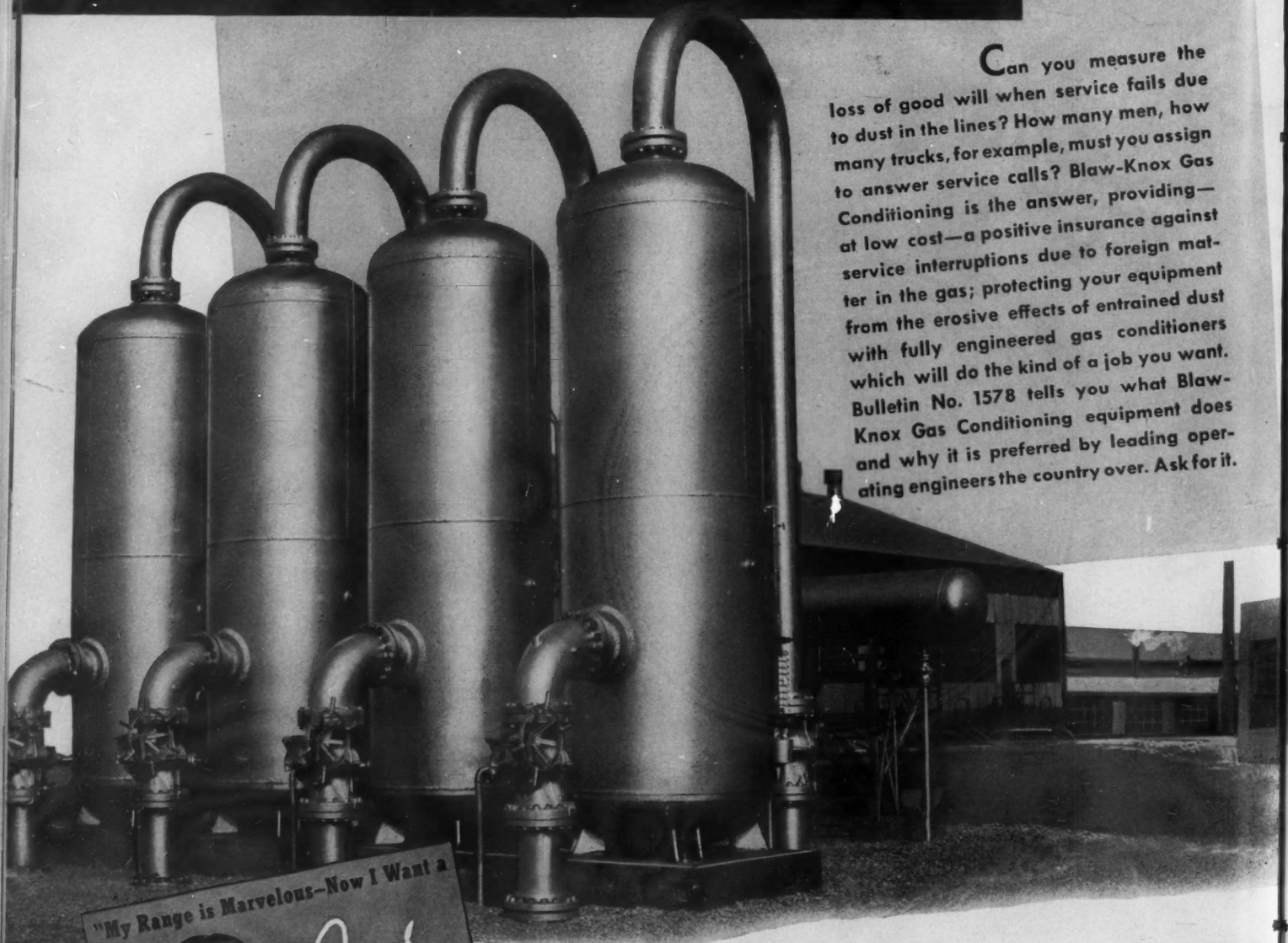
640 EAST 61st STREET . . . LOS ANGELES, CALIFORNIA

25 West 43rd Street, New York City — Mills Building, Washington, D. C. — 631 Spring Street, Shreveport, Louisiana — 201 East 1st Street, Tulsa, Oklahoma
Magnolia Building, Dallas, Texas — 529 M & M Building, Houston, Texas

Mount Vernon, Ohio — PLANTS — Grove City, Pennsylvania


Will our equipment cool the gas sufficiently when warm weather comes?
IS OUR GAS CLEAN ENOUGH FOR THESE NEW C.P. APPLIANCES?
Are our purifiers large enough?
What should we do about the heavy oil question?
Is present generating equipment adequate?
would a de-emulsifier pay for itself in added tar value?
What can we do to reduce holder costs?
SEMET-SOLVAY ENGINEERING CORP.
WE SELL
SOLUTIONS
TO
HARD PROBLEMS
NEW YORK
SEMET-SOLVAY ENGINEERING CORPORATION
40 Rector Street
New York, N. Y.

More Profit in Blaw-Knox *Conditioned* GAS!



Can you measure the loss of good will when service fails due to dust in the lines? How many men, how many trucks, for example, must you assign to answer service calls? Blaw-Knox Gas Conditioning is the answer, providing—at low cost—a positive insurance against service interruptions due to foreign matter in the gas; protecting your equipment from the erosive effects of entrained dust with fully engineered gas conditioners which will do the kind of a job you want. Bulletin No. 1578 tells you what Blaw-Knox Gas Conditioning equipment does and why it is preferred by leading operating engineers the country over. Ask for it.

Up go sales of appliances, down go service costs when GAS does its job unfailingly. As engineers know, nothing but CLEAN gas is dependable . . . especially when used with modern appliances which have smaller apertures and more delicate mechanisms.

A few of the many advantages of Blaw-Knox Gas Conditioning . . .

1—High capacity; gives full value per dollar invested.

2—Gas is thoroughly cleaned, no half measures. Dust and other foreign matter is dynamically forced into intimate contact with washing liquid.

3—Delivers perfectly clean, dry gas (if desired, equipment will resaturate with oil or water vapor).

4—Pressure losses cut. Very little loss in contacting and separating sections.

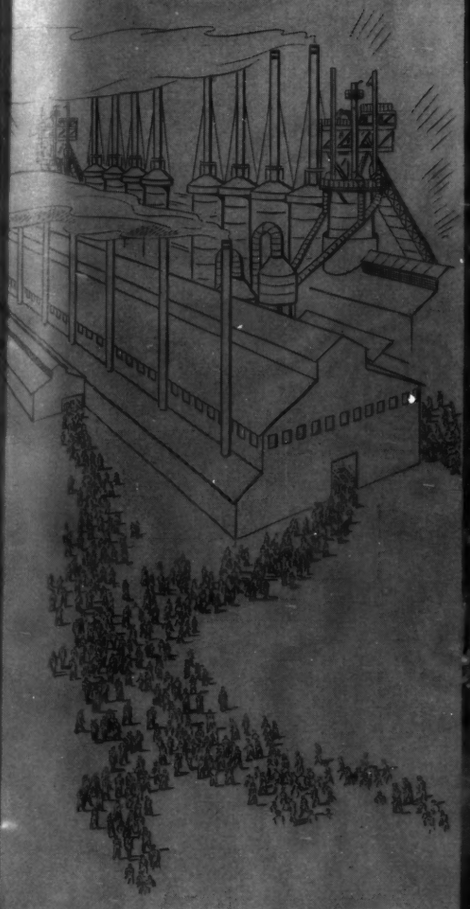
5—Dust and dirt are completely removed from gas flow.

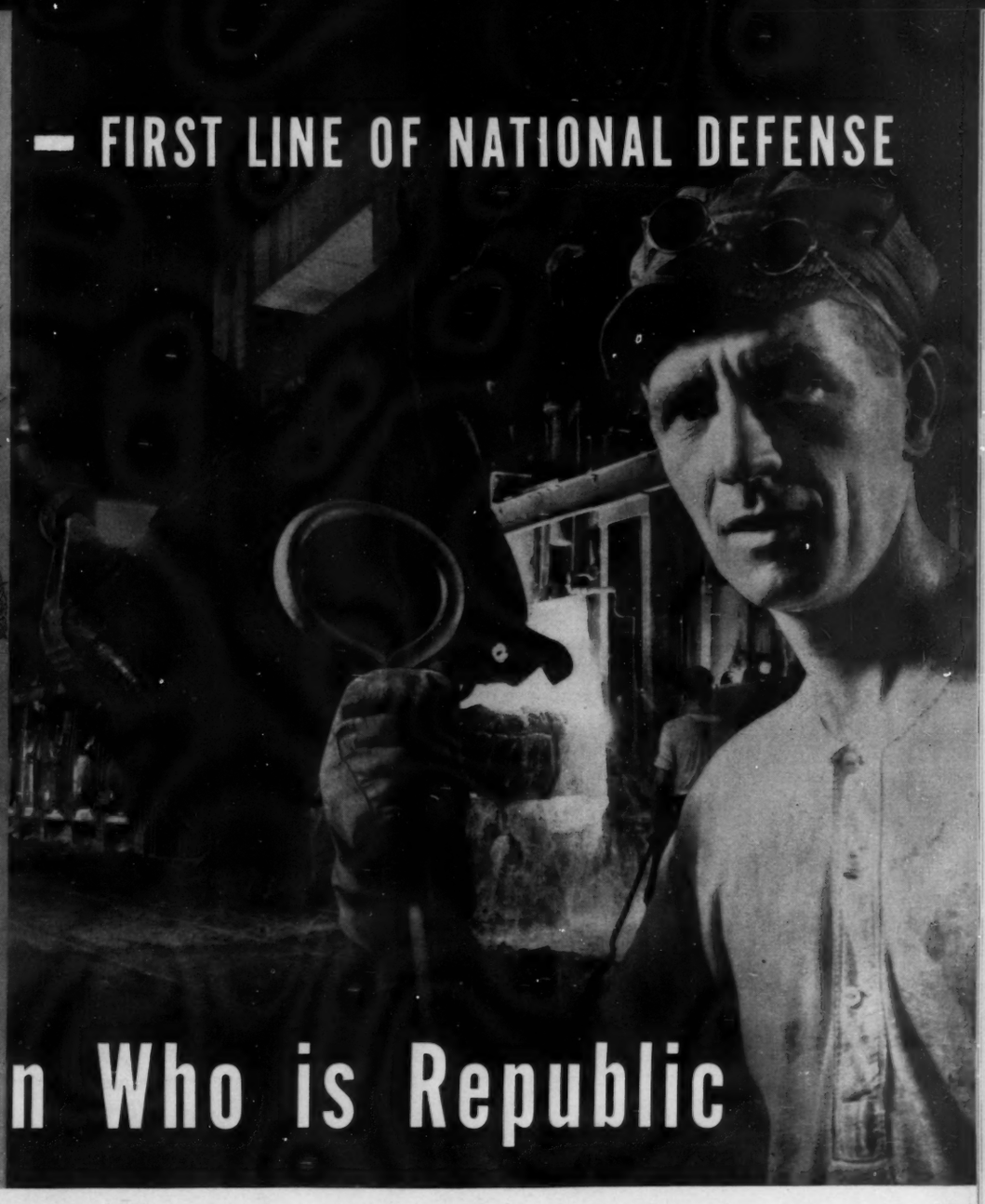
6—Blaw-Knox Gas Conditioners are the result of many years' research and experience in dust removal and separation of liquids from gas.

BLAW-KNOX
GAS CONDITIONERS

BLAW-KNOX DIVISION of Blaw-Knox Company • FARMERS BANK BLDG., PITTSBURGH, PA.

Steel — FIRST LINE OF NATIONAL DEFENSE





The Man Who is Republic

No bugle wakes him from his morning sleep.

No uniform tells all who see him that he is defending the liberty of America.

No beribboned medal shows his work well done.

But there he is—a typical American—55,000 of him in round numbers—working in Republic plants, mines, offices and warehouses in 35 states—daily doing his share to turn out huge quantities of billets, bars and strips of steel—that every industry may have the sturdy raw material from which to fashion the sinews that will make America safe for his children—and yours.

This is the type of skilled-in-steel worker that mans the far-flung operations of Republic. This is the type of man that during peace-time brings comfort and safety to the American way of life. And this is the type of man who, in this emergency, is giving unstintingly of his effort and his specialized knowledge, to provide America with more and better ***steel—first line of national defense.***

The line of steels and steel products manufactured by Republic is so diversified that we have prepared a complete listing in Booklet No. 199. A copy will be sent you upon request.

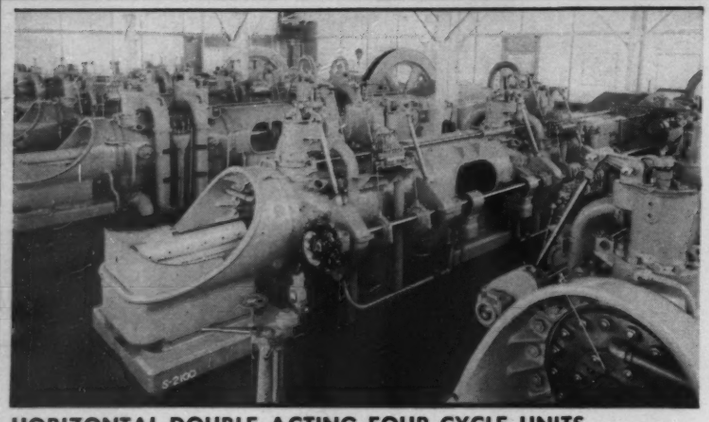
REPUBLIC STEEL

REPUBLIC STEEL CORPORATION • CLEVELAND, OHIO

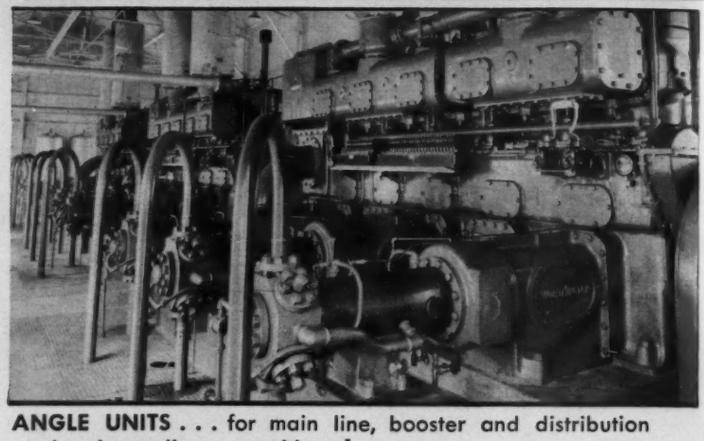
Berger Manufacturing Division • Niles Steel Products Division • Steel and Tubes Division • Union Drawn Steel Division • Truscon Steel Company

A COMPREHENSIVE SERVICE TO THE GAS INDUSTRY

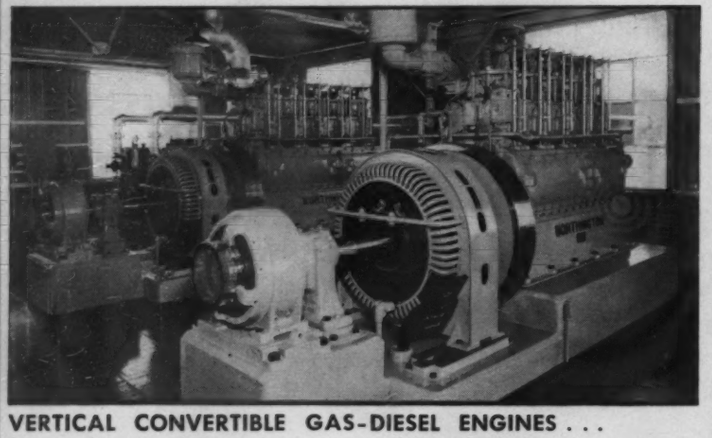
TRANSPORTATION • DISTRIBUTION • POWER GENERATION



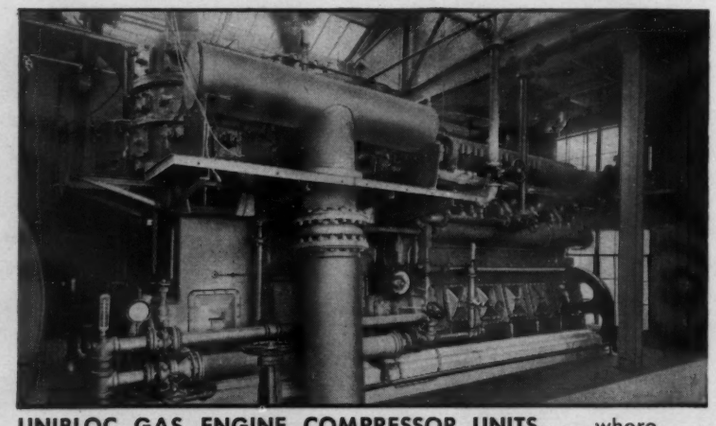
HORIZONTAL DOUBLE-ACTING FOUR-CYCLE UNITS . . . for heavy duty main line service in the larger capacities.



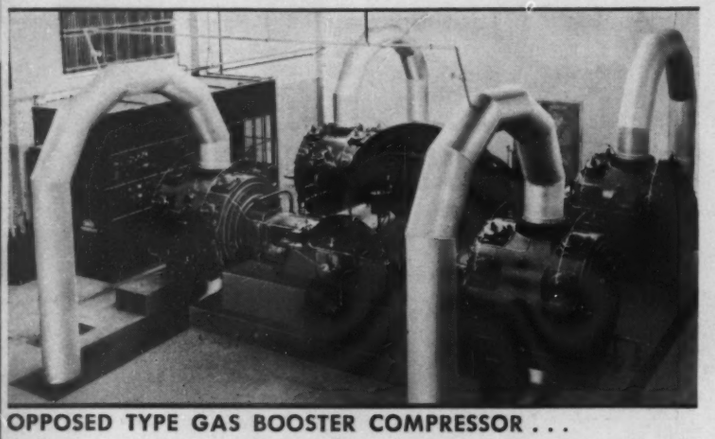
ANGLE UNITS . . . for main line, booster and distribution service, in medium capacities.



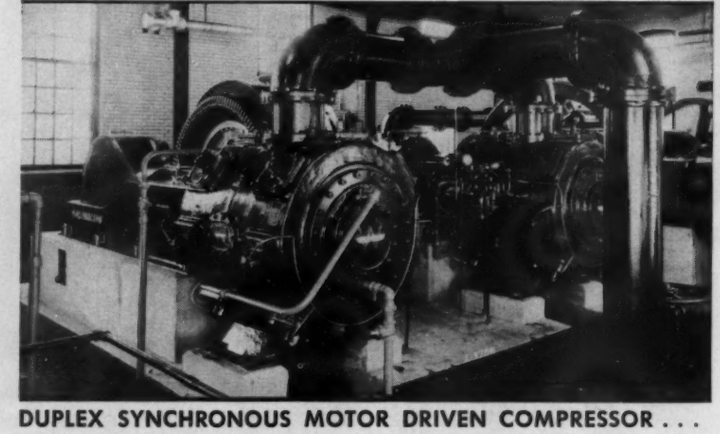
VERTICAL CONVERTIBLE GAS-DIESEL ENGINES . . . for auxiliary station service.



UNIBLOC GAS ENGINE COMPRESSOR UNITS . . . where space is limited . . . for gas distribution service.



OPPOSED TYPE GAS BOOSTER COMPRESSOR . . . design gives minimum shaking forces . . . for bad soil conditions.



DUPLEX SYNCHRONOUS MOTOR DRIVEN COMPRESSOR . . . for gas distribution service.

THE installations shown here exemplify the comprehensive coverage of Worthington power and pumping equipment for the gas industry.

For expanding the market for gas, Worthington power units are available in the convertible type from 50 to 1500 horsepower capacity. The convertible feature provides definite insurance against failure of the fuel supply, as a quick change-over can be made in a few hours at low cost, and the engines will give the highest economy on either gas or oil.

WORTHINGTON PUMP AND MACHINERY CORPORATION

GCO-4 General Offices: **HARRISON, NEW JERSEY** *Branch Offices and Representatives in Principal Cities throughout the World*

WORTHINGTON

U.S. cast iron PIPE

Centrifugally or pit cast—for water works, gas, sewerage, drainage and industrial service.

Copyright, 1940 U. S. Pipe & Foundry Co.

INTO THE EARTH goes another length of cast iron pipe to perform faithfully its job as an underground conduit. Whether it will again see the light of day is dependent only on the changing plans of man. In place, or relocated elsewhere, it will serve out its century or more of useful life. True of the oldtime cast iron pipe—more than ever true of U. S. Super-de Lavaud Pipe and U. S. Pit Cast Pipe as manufactured today.

U. S. PIPE AND FOUNDRY CO. • General Offices: Burlington, N. J.
Plants and Sales Offices throughout the U. S. A.

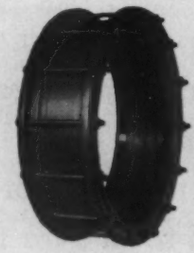
CHECK ALL FOUR!

SIMPLICITY—unskilled labor assembles standard parts on plain-end pipe, using only a wrench.
SPEED—typical examples: 5 minutes for 8"; 8 minutes for 14"; 12 minutes for 20" (two workmen).
FLEXIBILITY—expansion and other pipe movements absorbed; curves with straight pipe.
TIGHTNESS—The *only* flexible joint with a 50-year, *proved* record of permanent tightness.
SIMPLICITY
SPEED
FLEXIBILITY
TIGHTNESS

Before you decide on any pipe joint, check it for "ALL FOUR"—*Simplicity, Speed, Flexibility,* and *Tightness.* The builder of this 230-mile, 22" natural-gas line from Indiana to Michigan got ALL FOUR because he specified Dressers. • There is no "short cut" to *true* pipe-joint economy. Insist on ALL FOUR. *Only Dressers Give You ALL FOUR!*

DRESSER MFG. CO., BRADFORD, PA. Offices at New York, Chicago, Houston and San Francisco. In Canada: Dresser Mfg. Co., Ltd., 60 Front St., W., Toronto, Ont.

FITTINGS?—We make a complete line of Long, Cast, Reducing, and Insulating Couplings; also steel and malleable ells, tees, crosses, etc. Write for our General Catalog Number 36.



DRESSER
PIPE COUPLINGS

PRODUCTION BLOCKED BY A SLUG OF WATER

A Case Story

SOLVED WITH PREVENTIVE MAINTENANCE

TOMORROW—hundreds of plants may face a case like this: A midwestern manufacturer was suddenly swamped with orders. The plant had a good reserve capacity—yet, push as the management did, it failed to get the output needed.

The boilers and machinery were in excellent shape—but the steam lines were sluggish. The ailment was a common one—a condition that's quickly corrected with proper equipment.

That's how Preventive Maintenance entered the case. For, it's the only sure way of solving piping problems and keeping them solved. This simple technique guides you in installing and caring for pipe lines correctly; it helps you choose the right valves and fittings for every service.

This case shows how Preventive Maintenance works. While the management raved, the Superintendent put his hands on the trouble. The machines were not only slow in heating up, but they wouldn't stay hot. The drainage system was inefficient—it failed to remove condensate rapidly enough to keep the machines at maximum temperature.

The backlog of orders haunted the Superintendent. He saw that more than ordinary maintenance was necessary. "The Crane man," he said as he reached for a phone, "will help us solve this quickly and surely."

The two men reviewed the situation. To run the machines at top speed meant keeping them at maximum temperature. Condensate would have to be drained as rapidly as it formed. The correct solution, as Preventive Maintenance counseled, involved redesigning of the drainage system, and installing a Crane Inverted Float Trap on each machine.

Results: The condensate trouble was banished. Production was immediately doubled. Another user of piping knows the value of Preventive Maintenance. Also, knows that the best way to get most from piping maintenance dollars is to call in the Crane Man. Because, backed by Crane experience and the great Crane line of valves and fittings, he offers the means of a successful Preventive Maintenance program.

This case comes from the personal experience of W.F.C. —a Crane Representative in the Kansas City Branch

YOUR STEAM LINES KEPT HOT AND DRY WITH CRANE TRAPS

You are not getting the maximum heat and power from steam if your lines are not properly drained. You are straining the piping, shortening the life of valves, exposing steam-operated equipment to serious damage when condensate is not removed.

In steam lines up to 600 pounds pressure, the wasteful and damaging effects of condensate are completely eliminated with Crane Inverted Open Float Steam Traps. These sturdy, simple, and low-cost traps will pay for themselves many times over. Once installed they require minimum attention —yet, automatically, stop steam waste, step up efficiency.

For pressures up to 200 pounds, the Crane line of No. 981 traps will give maximum protection against condensate troubles.

1940 OUR 85th YEAR

CRANE

CRANE CO., GENERAL OFFICES:
836 S. MICHIGAN AVE., CHICAGO

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

NATION-WIDE SERVICE THROUGH BRANCHES AND WHOLESALERS IN ALL MARKETS

PRIMITIVE PIPE LINES OF OLD PEKIN

Age-old records show that Pekin (now Peiping) utilized Natural Gas more than 500 years before our country was discovered. Escaping from the ground nearby, it was transported through fragile bamboo pipes for evaporating salt water to produce salt and, as well, for illumination in that ancient seat of Chinese culture.

It is a far cry from this primitive practice to the modern method of distributing Natural Gas—an engineering feat never achieved by the China of antiquity, although she deserves credit for pointing the way.

As a result of her discovery, Natural Gas is now delivered to mains through giant metal pipe lines, overland and underground, many drawing their supply from distant fields.

Used abundantly and economically for numberless residential, commercial and industrial purposes, Natural Gas has attained rightful recognition as one of the greatest contributions of convenience to our present day civilization.

COLUMBIA SYSTEM

COLUMBIA GAS & ELECTRIC

CORPORATION

Why not Investigate . . .

This Low-Cost Method of Reducing Unaccounted-for Gas Loss

"Carboseal" anti-leak is now being used by over 250 gas companies for reducing leakage in packed bell-and-spigot joints in systems distributing dry gases. Hundreds of reports received from these companies confirm the effectiveness and permanence of "Carboseal" anti-leak treatment. The costs summarized in the table at the right have been taken from these reports. They include both material and labor costs and are typical of general field experience.

How "Carboseal" Anti-Leak Works

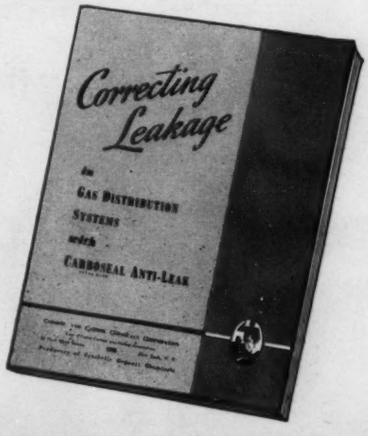
When dry gas is substituted for wet gas, the water and oil in the joints evaporate, the packing is dehydrated and shrinks, and leakage results where the lead or cement caulking has loosened due to expansion or contraction.

"Carboseal" anti-leak swells the packing and keeps it wet indefinitely. This scientifically developed liquid is introduced into the mains at the high points and flows over the joints by gravity to the drips where the surplus is recovered for re-use. It can also be sprayed into the mains by means of a hose. Both of these methods are used without interrupting gas service, and without making expensive joint excavations.

Diameter of Main	*Length of Main, Feet*	*Method of Treatment*	*Actual Cost Based on 3-in. Equivalent Main*	
			Dollars per Mile	*Cents per Joint**
3 in. equiv.	181,632	Gravity	145	29
4 in.	1,200	"	113	23
4 in.	11,900	"	135	27
3 in. equiv.	43,800	"	180	36
3 in. equiv.	544,525	"	383	77
4 in.	2,332	"	135	27
4 in.	22,200	Hose	331	66
4 in.	26,250	"	279	56
6 in.	5,576	"	237	47
4 in.	154,954	"	440	88
6 in.	16,400	"	318	64
10 in.	4,925	"	230	46
12 in.	2,000	"	184	37
16 in.	1,200	"	173	35
4 in.	203,404	"	407	81
6 in.	23,976	"	293	59

*Based on 500 joints per mile.

Get a Copy of this New Book!



It will pay you to send for a copy of this book which contains in compact form all the essential facts about "Carboseal" anti-leak, the methods of application, comparative costs, and results obtained. Possibly this inexpensive and economical method of correcting joint leakage can be used to advantage in your system. A request on your company letterhead will bring you the book, without obligation.

CARBIDE AND CARBON CHEMICALS CORPORATION

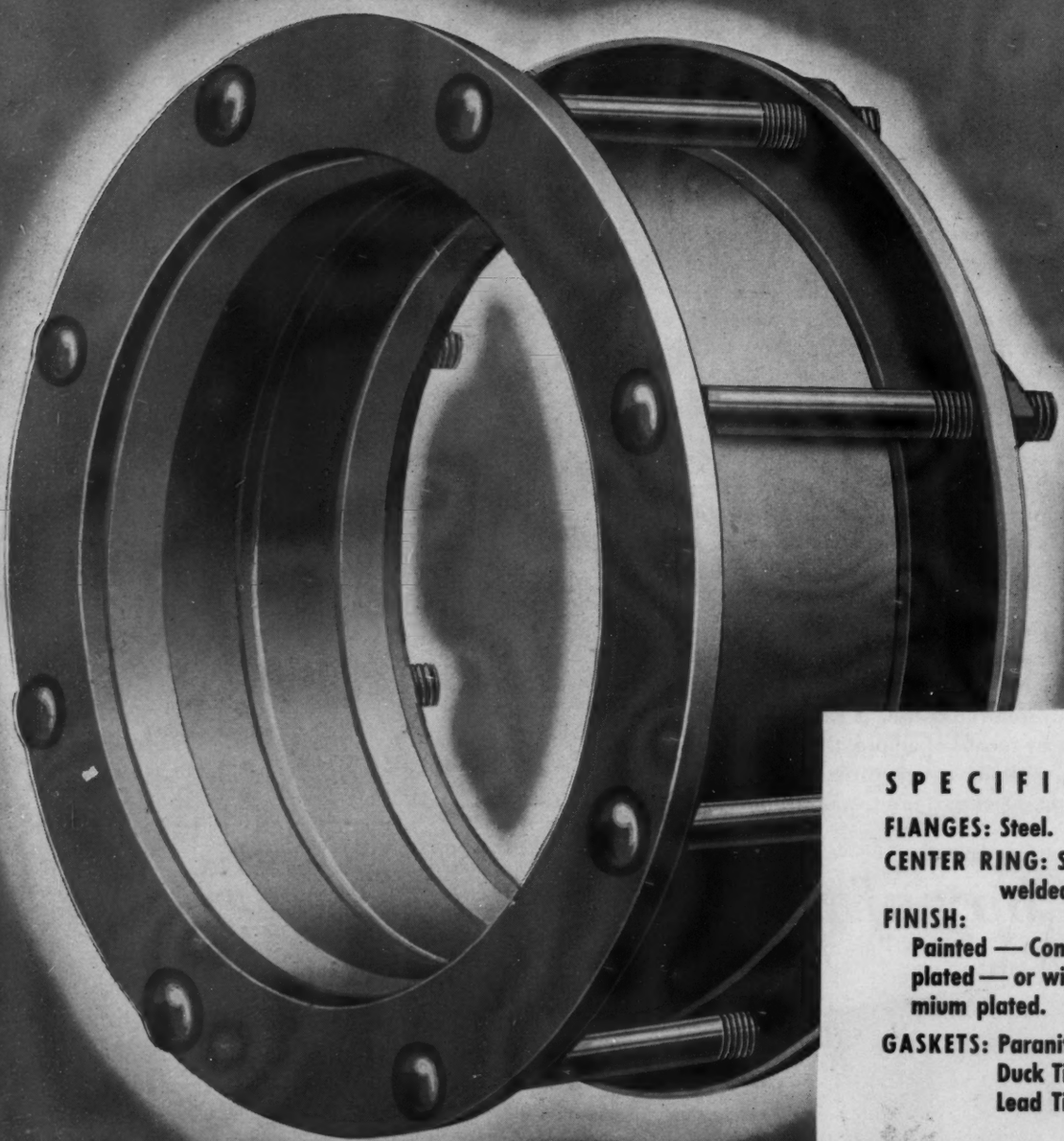
Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York, N. Y.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

THE *Dayton* No. 1 Coupling



SPECIFICATIONS

FLANGES: Steel.

CENTER RING: Steel—electrically welded.

FINISH:
Painted — Completely cadmium plated — or with bolts only cadmium plated.

GASKETS: Paranite C or M.
Duck Tipped.
Lead Tipped.

NATIONAL

THE NATIONAL SUPPLY COMPANY

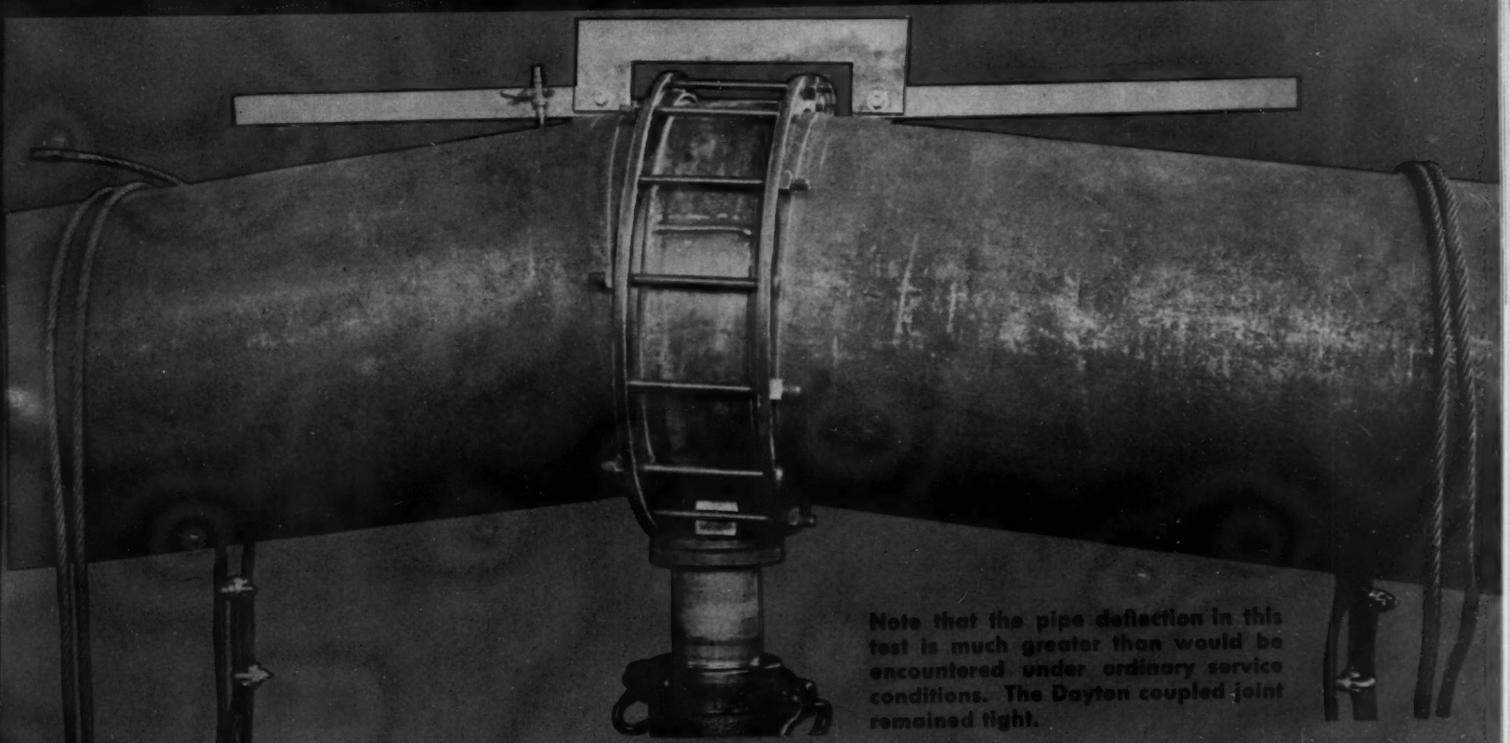
DAYTON COUPLING DIVISION....
...GRANT BUILDING • PITTSBURGH, PA.

"Dayton" for Every Type of Coupled Line

ASSURES TIGHT

A Dayton No. 1 Coupling ready for a special shop test to determine its ability to maintain a flexible and tight joint.

AND FLEXIBLE



Note that the pipe deflection in this test is much greater than would be encountered under ordinary service conditions. The Dayton coupled joint remained tight.

PIPE JOINTS

FISHER TIME TEMPERATURE BOOSTERS serve 5

Oklahoma Natural Gas Company Distribution Systems

Oklahoma Natural Gas Company now has 5 complete city distribution systems automatically controlled by FISHER Time-Temperature Boosters. The Company first installed Boosters in Ardmore. Later installations were made in Yukon and El Reno. Results obtained from Time-Temperature control in those cities were so satisfactory that the company recently installed them at Norman and Wagoner. Installations in the company's distribution systems are as follows: Ardmore, 10 Boosters; El Reno, 5 Boosters; Yukon, 4 Boosters; Norman, 6 Boosters and Wagoner, 3 Boosters. These FISHER Time-Temperature Boosters act as district regulators and El Reno, Yukon and Ardmore have FISHER-KING Booster Regulators at the city gate stations.

FISHER BOOSTERS PAY FOR THEMSELVES

These FISHER Boosters anticipate changes in demand requirements by varying downstream pressure in response to atmospheric temperature changes. Time control is also another feature.

Many other progressive gas companies are fast changing over to FISHER Boosters because this equipment actually pays for itself in a relatively short time through the savings made on "unaccounted for" gas.

GET FREE BOOK — Call in a FISHER Sales Engineer today — or write for new FREE book that tells how FISHER Boosters can reduce gas leakage as much as 50%.

RESULTS

obtained with FISHER Gas Pressure Boosters, by Oklahoma. Natural Gas Company.

1. Average system pressures were reduced 25% to 50% with corresponding decreases in "unaccounted for" gas.
2. Gas savings paid for FISHER Boosters in surprisingly short time.
3. Customer complaints and calls for appliance adjustments were substantially reduced because adequate pressures are now maintained at all times.

FISHER GAS REGULATORS

FISHER GOVERNOR COMPANY

807 FISHER BUILDING, MARSHALLTOWN, IOWA

Most Any Utility Job
Is Easy FOR A BARCO

● BARCO Hammers are "tailor-made" for the big and small day-in-day-out hammer jobs on any Utility's expansion and maintenance program . . . and for a lot of Summer and Winter emergencies no other equipment could handle at anywhere near a BARCO's speed and economy.

This utility-proved tool — self-contained and self-powered — is so compact and light you can rush it from job to job in a light truck or service car. On location, one man operates . . . carries it with ease to all parts of hard-to-get-at places.

BARCOs cost so little to operate and maintain . . . are so versatile and dependable . . . they soon pay for themselves. Put one on the job to prove the worth of a BARCO's many distinctive advantages. Its performance will convince you that it's sound business to have a battery of these hammers on your equipment list.

BARCO MANUFACTURING COMPANY 1830 Winnemac Avenue CHICAGO, ILLINOIS

BARCO *Portable* GASOLINE HAMMER

THE RANGE DETERMINES THE TRUE MODERNITY OF GAS AS A

UNIVERSAL

GUARANTEES A NEW AND HIGHER STANDARD OF COOKING PERFORMANCE!

The Universal Gas Range with its advanced devices promotes the best interests of the gas utility company because it emphasizes the natural advantages of gas as the one best cooking fuel. Universal gives superior controllability of all cooking heats—placing at the command of the homemaker all methods and processes of cookery. It brings to the consumer a new conception as to the inherent merit of gas fuel—its outstanding economy, convenience and flexibility. Universal is the instrument that proves the statement —"Gas Is The Ideal Fuel For All Cooking Purposes."

GAS OR GASOLINE

★

It is the vehicle through which it is used that in the final analysis enables the fuel to render the utmost in service. Modern motor fuel utilized in a 1920 vintage automobile cannot possibly give the consumer a true understanding of its remarkable performance capabilities. It is also a fact that gas fuel utilized through an obsolete range creates an entirely false impression as to the true modernity of gas as a cooking fuel. With gasoline it is the car—with gas fuel it is the range that determines the type and degree of service performance rendered.

★

UNIVERSAL *Gas Ranges*

MANUFACTURED BY CRIBBEN & SEXTON CO. • 700 N. SACRAMENTO BLVD. • CHICAGO

GUEST Editorial

The Only Way to Go Is Upward!

By WALTER C. BECKJORD President, American Gas Association

NO INDUSTRY stands still — it either makes progress, meets its ever-present competition, solves problems, changes its methods and product to meet constantly changing habits of living, or, it retrogresses and ultimately passes out of existence.

Nothing ever stands still in human endeavor, in nature or in life itself. Many of the things that used to be held most sacred have passed on with the relentless march of time.

All are familiar with the old brownstone front that used to make the finest residential districts. Houses once beautiful and well-kept are now boarding houses, or torn down entirely to permit gasoline stations or parking lots. Old office buildings outmoded are torn down to save taxes. All these are milestones in the development of progress.

The gas industry has behind it 125 years of history fraught with struggle, intense activity, some failures and disappointments, and numerous successes. It has grown up from small beginnings — it has covered the cities with mains and services. The development of natural gas has grown from minor systems near the gas fields into huge transmission networks covering the country.

Huge industrial plants are now using tremendous quantities of gas fuel in highly technical heating problems. Chemical plants abstract certain constituents from gas to make alcohol, explosives, silk stockings, plastic material and other refined chemical products used in many phases of manufacture. Homes, office buildings, hospitals, manufacturing plants, all use gas for heating their buildings. Houses are cooled in summer, warmed in winter. Refrigeration for food and perishables has been developed and accepted as a household necessity and the cooking equipment now available for gas has no equal. The modern kitchen has been transformed from a dark, messy room to a marvel of beauty — a symphony of color.

All these developments have been accomplished by the relentless and tireless efforts of gas technicians, engineers, salesmen, manufacturers, dealers, executives and all employes — by the directed and coordinated effort of the thinkers, dreamers and workers who keep on thinking and planning not only during the working hours of the day but at night, all the time, everywhere.

These things don't just happen — they are the results of planning, of foresight, of courage, of organized effort, and in this epic of the development of a great industry, the American Gas Association has played a major part. It has been the means of getting gas men together every year in committee meetings, discussions, conferences large and small, to develop ideas, to take counsel with others, to make plans for research, to organize and make possible a large modern laboratory for testing appliances as well as to develop new ideas, improvements in existing appliances, and finding new ways to do things.

Mr. Beckjord is vice president and general manager and chairman of the executive committee, Columbia Gas & Electric Co., New York, N. Y.

Methods of manufacture have been improved and enlarged, efficiency of operation has been increased, better service has been rendered to the public at lower cost, standards of service have been worked out and stabilized in collaboration with government bureaus. National advertising has been made a possibility and every year people are becoming more gas-conscious wherever heat is used, and that is almost everywhere in the civilized world of today.

Gas has been made an efficient, flexible, economic, technical force, without which the tremendous industrial development which is the contribution of the United States to the world would have been impossible.

Leaders of the industry, men who have worked up from the ranks, who know the problems intimately, have given generously and unstintingly of their time, experience and strength, to the onward march of gas, to the work of the American Gas Association, and all the members of the Association, to the last man, have responded loyally to the call for workers, to committee work, to preparation of papers and reports, to sales conferences.

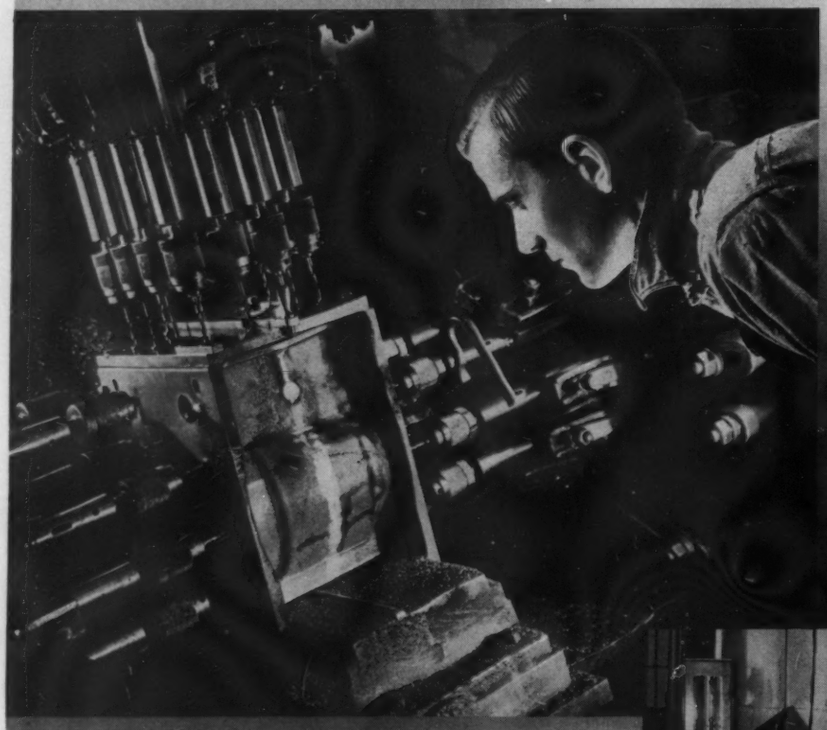
All these involve much time and thought, and many meetings. In this busy world of today, with all its demands for time and money, careful consideration should be given in the future that no time is wasted, no unnecessary meetings called and that the same efficiency govern our meetings and discussions that applies to our production methods and business.

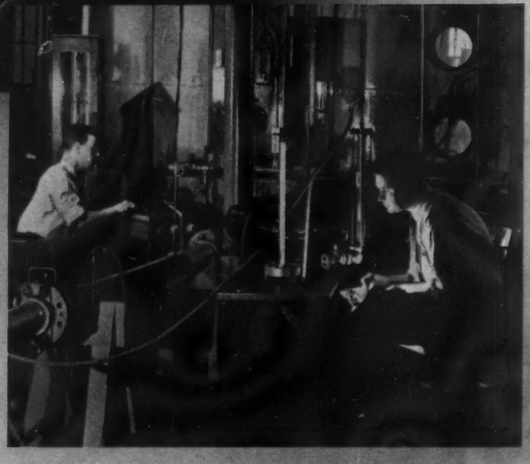
It has been a labor of devotion to a cause in which all have played a part — everyone has had a share in it — and the joy of accomplishment and satisfaction of a job well done, the reward.

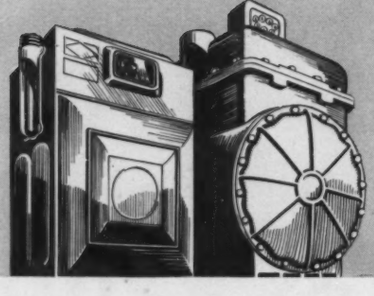
Today the gas industry and the American Gas Association stand at the height of their power and development. Long years of successful work have justified their faith in the industry. They have accomplished much in spite of all the vicissitudes of business and depressions. They have performed a great public service and have reason to feel proud of their record. More can be done — new ideas are constantly coming out, new habits of living are being formed. Tremendous economic, social and political changes are taking place throughout the world, which are having and will have a far-reaching effect on the future life of this country.

In all these things the gas industry and the American Gas Association are playing a leading part. They will be ready for the change, they will not falter, they will meet the new front bravely, and the men of the industry will meet the challenge. They will carry on the tradition of service to the public so thoroughly developed in the work of the Association. There is only one way to go, and that is upward.

Laboratory controlled ... precision built







GENERAL OFFICES • 60 EAST 42ND STREET, NEW YORK, N. Y.

AMERICAN METER COMPANY

INCORPORATED (ESTABLISHED 1836)

1320

THERMALLY *Thinking*

A Time To Unspecialize

For 362 days in the year, the demand of the gas industry for specialization in one of the fields of production, distribution, utilization or service locks each division of the business in separate compartments of activity. Yet basically no department or company operates independently. Integration of the work of the parts of the industry with the whole is vitally important. Here, then, is one of the chief values of the annual American Gas Association convention. And three days are none too many to invest in that exchange of information and ideas upon which the long-range success of the industry depends.

Gas versus Electricity

Now, with the industry in convention assemblies, it seems an appropriate time for us all to remind ourselves that we, as individuals, are in the gas business, and that any other fuel that is being utilized where gas should be installed represents so much business that has slipped through our fingers.

Some of this business has been pirated through one or more of the various tricks known to slippery competition; some of it has been lost after a good clean fight; but a lot of it has just gone by default. This goes in particular for the electric cooking load. The electrical industry has hammered away on its basic half-truths regarding the superiority of electricity for cooking, until many gas men themselves have subconsciously accepted the premise that electricity is cleaner, cooler, more modern and easier to control than gas. The only argument left for gas, under this unhappy psychological breakdown, is that it is cheaper.

The importance in the gas industry of the combination utilities, those selling both gas and electricity, has led to a curious soft pedalling of an open discussion of the competitive nature of these two services in the cooking field. Many of the combination companies regard the inroads of the electric range with the complacent thought that either type of cooking adds to their load; while others are openly biased in favor of electricity.

But the gas utility employes, and the employes of the gas divisions of the gas and electric companies, have to know which side of their bread is buttered. For this reason, *GAS* has undertaken in this issue a refutation of five of the most flagrant claims made by the promoters of electric cookery. We recommend it to the rank and file of the gas industry employes who are getting tired of having their favorite fuel classed as an outmoded commodity along with zinc bathtubs and horsecars by the high-pressure razzle-dazzle of power promotion.

And we recommend it to executives as well, in the modest assumption that most of them recognize that the gas range load is too large and too important a factor in their company operations to be allowed to disappear by default.

This Changing World

It has often been said that we are living in a changing world; and we need look no further than the first page of the American Gas Association's Convention program to realize that here is an industry that is fully aware of the momentous upheavals that are daily and hourly overturning old and orthodox preconceptions of government, economics, and politics.

Industry in a Changing World; The Gas Business in the Modern World; The Consumer Movement Is With Us — What About It?; The Gas Industry's Opportunity in National Defense — the first four addresses scheduled for the first General Session of the Convention, are all by subject and by probable treatment matters that would have sounded vaguely visionary or perhaps even radical on a program of a few years ago.

There is probably no man alive who has not sighed occasionally in nostalgic yearning for some mythical good old days which are gone forever. But the true measure of a man's stature is his resourcefulness in the face of new situations, and his ability to adapt himself to them, so that he may always remain part of an ever-changing world. Those who dally too long with caressing memories are swept aside by the dynamics of ruthless change.

Our own industry may be pardoned an occasional backward look, tempered with an understandable satisfaction in its more than a century of progress. But its soundest guarantee of a brilliant and expanding future is not in what has been done, but in what is projected for the tomorrows that lie ahead. It is human nature to hope that lush green pastures are soon to greet our eyes. This is no weakness, provided only that we remain willing and able to till the stony ground that still may intervene.

The months that lie ahead may see demands such as have never before been made on all industry. They are demands that will be made on bondholders and jobholders alike. It is a source of satisfaction and pride to realize the gas industry will never wait for conscription. It has already placed itself in the vanguard of preparedness, and is making common cause with those who would defend the American way, and by that defense make the American way ever worth defending.

A. G. A.'s Annual Convention

ONCE again the American gas industry is meeting at the annual convention October 7 to 10 to discuss mutual problems, examine the year's technical improvements in methods and equipment, renew friendships and explore the pleasure spots of Atlantic City and New York City.

Under the auspices of the American Gas Association, a full program of activities has been prepared for this 22nd Annual Meeting. The major addresses will be devoted largely to questions involving national defense and the gas industry's opportunity to serve the country in this critical period. Specialized topics will be covered in sectional meetings and conferences during the four-day sessions. The main subdivisions of these special topics will be natural gas, accounting, commercial, home service, industrial gas, personnel, and technical.

Although these more serious considerations will occupy most of the delegate's time at the convention, a liberal pleasure program, particularly for the wives, has been arranged. It will be climaxed by a Gas Industry Day at the World's Fair in New York, Friday, October 11. Free tickets of admission will be provided through the courtesy of the Metropolitan New York Companies. With this admission goes a key to the Fair's Golden Key Contest, which may win some lucky delegate an automobile. Tickets and keys will be issued at the convention.

In the Consolidated Edison's spectacular "City of Light" exhibit, convention visitors on Gas Industry Day will be guests of the company at an open house from 2 to 6 o'clock. Later in the afternoon a cocktail party for Association officers and convention delegates will be given by the A.G.A.E.M. in the Court of Flame Club in Gas Wonderland.

Dinner will be served in the Belgium Pavilion, overlooking the beautiful Lagoon of Nations fountain display. Formal entertainment will be completed by a fireworks display in Liberty Lake. Of course, all the gas exhibits are making special plans to entertain delegates at their various booths.

An always-welcome feature of the convention, the award of honors for outstanding achievement, will again be a part of the general sessions' program. These include: McCarter Medals for outstanding acts of life saving; the Charles A. Munroe Award for the greatest individual contribution to the general advancement of the gas industry; the Beal Medal for the best technical contribution to Association meetings throughout the year, and the A.G.A. Meritorious Service Medal.

The second annual award of the Gild of Ancient Supplers will also be made at one of the general sessions. This organization is limited to men of at least 10 years' service to the gas industry and all Supplers are executives and representatives of concerns who make or distribute appliances, equipment, supplies or services to gas companies. The first award, last year, went to R. M. Conner, director of the A.G.A. Testing Laboratories.

Natural Gas Growth

The growing importance of natural gas in the industry is indicated by the excellent program prepared for this section. Elmer F. Schmidt, chairman of the Natural Gas Section, and vice president and operating manager of the Lone Star Gas Co., will introduce speakers on various phases of natural gas operation. Reports will be given by chairmen of various subcommittees.

Among the topics to be considered at these section meetings will be that of "Liquefaction, Storage and Regasification of Natural Gas for Peak Loads."

This important development in the natural gas field will be discussed by Dr. R. W. Miller, research director, the Peoples Natural Gas Co. and Hope Natural Gas Co., and John A. Clark, assistant general superintendent and chief engineer, Hope Natural Gas Co.

Although the emergence of world crisis tends to overshadow temporarily the peace needs of the American woman, the contribution of the gas industry to better and more comfortable home life is as great as ever. Particular attention to this phase of the industry's activities will be the theme of the meetings of the Home Service Section at a breakfast meeting Wednesday morning in the Hotel Traymore. This theme was selected to emphasize the influence which can be exerted by home service workers in their daily contacts with women customers.

Mrs. Eliza M. Stephenson, of the Jersey Central Power & Light Co., will preside at the breakfast. The program is composed of a group of short talks and will deal with sales floor activities, maids' classes, school contacts, radio and advertising.

Executive Board of the American Gas Association at a meeting in New York, September 10, 1940. AROUND THE TABLE (left to right): **George F. Mitchell**, president Peoples Gas Light & Coke Co.; **Geo. S. Hawley**, president, Bridgeport Gas Light Co.; **P. S. Young**, vice president, Public Service Electric & Gas Co.; **T. J. Strickler**, vice president, Kansas City Gas Co.; **Alexander Forward**, managing director, American Gas Association; **Walter C. Beckjord**, vice president, Columbia Gas & Electric Corp.; **R. H. Hargrove**, vice president, United Gas Pipe Line Co.; **H. L. Dickerson**, Ebasco Services, Inc.; **Marcy L. Sperry**, president, Washington Gas Light Co.; **L. B. Eichengreen**, vice president, Philadelphia Electric Co.; **Herman Russell**, president, Rochester Gas & Electric Corp.; **N. Henry Gellert**, president, National Public Utilities Corp.; **Frank H. Adams**, vice president, Surface Combustion Corp.; **Ernest R. Acker**, president, Central Hudson Gas & Electric Corp. BACK ROW, STANDING: **Henry Obermeyer**, vice president, Consolidated Edison Co. of New York, Inc.; **Kurwin R. Boyes**, secretary, American Gas Association; **D. W. Harris**, vice president, Arkansas Natural Gas Co ; **F. B. Flahive**, Columbia Gas & Electric Corp.; **Bruno Rahn**, president, Milwaukee Gas Light Co.; **John W. Batten**, vice president, Michigan Consolidated Gas Co.; **F. M. Goodwin**, Boston Consolidated Gas Co.; **F. T. Carmody**, counsel, New York; **Frank H. Payne**, president, American Meter Co.; **N. T. Sellman**, Consolidated Edison Co.; **W. E. Derwent**, vice president, George D. Roper Corp. SEATED: **Elmer F Schmidt**, vice president, Lone Star Gas Co.; **Louis Ruthenburg**, Servel, Inc.; **Davis M. DeBard**, Stone & Webster Service Corp.; **F. T. Rainey**, Ohio Fuel Gas Co.

SHADOWED NIGHT

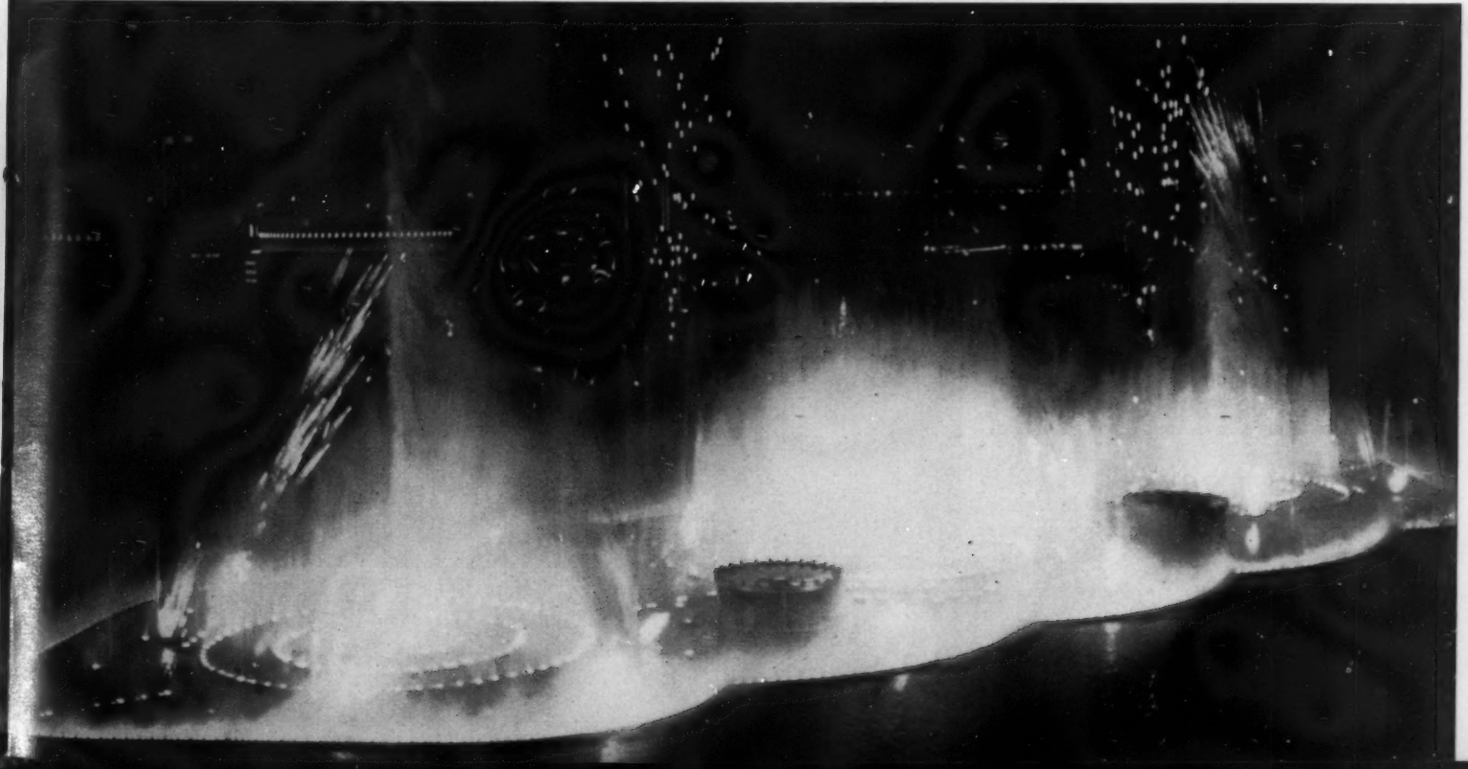
At the New York Fair

By night the fair is a panorama of bright lights against a darkened sky.

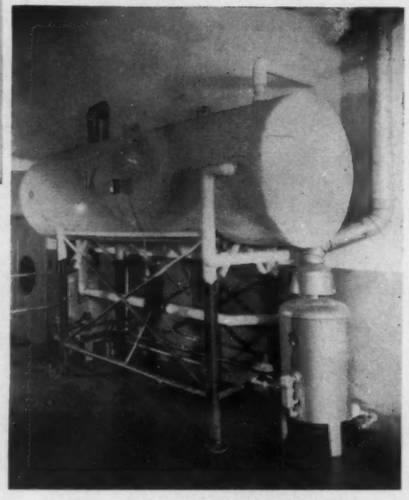
Night comes to New York in the magnificent diorama created for the Consolidated Edison Co. exhibit.

Center of attraction for the A. G. A. convention delegates in the evening will be the Court of Flame at "Gas Wonderland," scene of a cocktail party to be given by the Association of Gas Appliance and Equipment Manufacturers between 5 and 7 P. M. Against the surrounding blackness of the night, the four pylons surrounding the roaring flame of gas rising from the center present one of the most striking night displays in the exhibit area.

Seen from the Belgian pavilion where many will dine, the nightly fountain display is a scene of fantastic splendor compounded from water, flame, color, music.



AT LEFT: General view of Cal-Aero school, near Ontario, Calif. In the foreground at left is one of the 200x132-ft. hangars. Barracks, mess hall, recreation hall and administration buildings appear in the background. This entire project, all gas equipped, was completed in 40 days.



AT LEFT: Gas-fired water heater which supplies hot water for the kitchen of the Cal-Aero school. At present 200 men are housed and fed during the 10-week training period at this army subsidized school.

At the Cal-Aero School in California Gas Plays a Part in the

NATIONAL DEFENSE

BELOW: Bank of heavy-duty gas ranges in the kitchen of the Cal-Aero school. Other gas equipment here includes forced air heating units in the barracks and recreation hall.

ALL gas equipped is the new Cal-Aero Cadet School, opened in August near Ontario, Calif., as a training center for army pilots in America's vast air defense program. Here, under direction of army and civilian instructors, air corps cadets will be given 10 weeks preliminary flying training. At the moment, accommodations have been completed for approximately 200 students; but the plan calls for additional facilities to handle as many as 600 trainees at a time.

This first unit of 10 buildings, including four 200- x 38-ft. barracks, two 200- x 130-ft. hangars, a 60- x 75-ft. kitchen, a recreation hall, mess hall, classroom building and combined administration and medical building, as well as a two-story control tower and gasoline filling station for airplanes, was completed in a phenomenally short time. On August 5, just 40 days after the 375-acre tract was taken over by the company which is handling this project, the plant was ready for occupancy, even to landscaping, lawns and shade trees. During the 40-day period a complete water system, including two wells, was installed; miles of sewers were laid and a sewage disposal plant was constructed; an underground electric power distribution system and gas lines were installed; and a 2600-ft. paved runway was laid down on the flying field. Nearly 500 men at a time were employed on the job, which was handled under a general contract by C. T. and W. P. Stover, Claremont contractors.

All structures at the new training center are permanent buildings of stucco finish. The barracks accommodate 48 men in each unit, four men sharing two bedrooms with a common bath between. These buildings are insulated with sawdust and heated by thermostatically-controlled, gas-fired, forced air units. The mess hall and recreation hall are linked together by a large kitchen, which is equipped with a bank of heavy-duty restaurant ranges and other gas-fired equipment. The other buildings are heated by factory type gas-fired units suspended from the ceiling. Service in the dining room will be family style, with eight men to a table. Officers will be served in a separate room.

The Cal-Aero organization is a subsidiary of the Curtiss-Wright Co. and is headed by Maj. C. C. Moseley. This organization has undertaken an extensive training program for the government in Southern California, and the Ontario plant is but one of a number of training centers which have been created to meet the present world emergency.

WHO AMONG US in the gas industry has not found himself in the middle of one of "those" arguments — the gas versus the electric range? A gas salesman, of course, can trade punch for punch. BUT not all of us are salesmen. Not all of us have at our tongue's end those telling facts and figures with which to combat the "fifth column" activities of electric cookeryists. The facts of the matter are that the gas range can meet the electric range point by point all along the line and go the electric appliance considerably more than one better on every one of them. With these points all of us should be familiar, so that we may . . .

Let the Facts Speak . . .

USUALLY the fun starts when someone, at an evening gathering, say, remarks in all seriousness:

"The next range I buy is going to be an electric range!"

No gas man is going to sit back and let a statement like that pass without trying to find out how the other got himself in such a state of mind. If he is a gas salesman, the situation obviously is made for him. But if he is a gas man whose work has never brought him in contact with competitive matters, he finds himself trying to duck a barrage of such seeming crushers — produced, of course, in the electric industry's propaganda mill — as, "Electricity is cleaner!" "Electricity is cheaper!" "Electricity is simpler!" and the like. What to do?

Well, the very first thing to do is to find out *what sort* of gas range your electric-minded friend has in his kitchen. The chances are better than ten thousand to one that it was purchased about 1910, and his whole idea of gas cookery is based on what that faithful old jalopy can do. The electric range he has in mind, on the other hand, is sure to be a 1940 model he has just seen demonstrated.

The implication back of all the electric industry's advertising and sales presentation is that the gas range is a hopelessly outmoded appliance; that only on electric ranges is it possible to secure automatic lighting, automatic time and temperature controls, oven insulation, full porcelain enamel, utility compartments, and the like. But the fact is this:

There is nothing in the way of a modern convenience that can be obtained on an electric range that is not obtainable on a modern CP gas range — and at a lower initial cost, too!

The modern gas range can match feature for feature with the best electric range built and demonstrate a superior performance record, for all practical purposes, on every one of them. The American Gas Association Testing Laboratories at Cleveland recently have made careful laboratory tests of some 30 or more points upon which the manufacturer of one of the best electric ranges on the market claimed superiority of his product over a competitive appliance. In every single instance, using a stock model Certified Performance gas range, the gas range equalled the electric range, and in every important respect considerably bettered the latter's performance record.

Here is a fact to bear in mind. It is one that, in the final analysis, sets at naught everything the electric industry has to say about the performance of the electric range, and it is one that cannot be brought out too early or too often in any gas versus electric cookery argument:

In the development of the electric range, *the performance of the gas range* has set the standard all along the line. In the improvement of one feature after another, electric range technicians have attempted to come *somewhere near equalling the job done by the gas range.* They increased the size of the top burners, stepped up their wattage, and improved the type of material used in the elements to try to match the speed of the gas burner. They have sought far and wide — and are still searching — for a metal and a method of construction to be used in the element which would permit it to stand up longer under the terrific punishment it takes — in order to try to offset to a certain extent the fact that *a gas burner never wears out.*

In order to secure some of the economy characteristic of gas cookery, electric range designers placed a heavy insulating jacket around the oven, thus cutting down the energy input necessary to maintain baking and roasting temperatures in the oven. To offset the disadvantage of an "after-glow" in the elements as they cool off, they have carried on a program of propaganda built around the thought that this heat loss is "stored energy," instructing their users to turn off the element at the proper moment and to let the cooking operation sort of coast to completion. (This is fully as practical as turning off the ignition switch of an automobile before reaching a stop light in order to save gasoline.) And in order to still further lessen the big dif-

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THE FACTS PRESENTED on this page are not the work of any one man or any one organization, but are the result of much research into the problem of gas versus electric cookery. For their generous collaboration in supplying factual data for the preparation of this article, GAS wishes to thank the American Gas Association, the American Gas Association Testing Laboratories, the Southern California Gas Co., Southern Counties Gas Co., George D. Roper Corp., American Stove Co., and the Tappan Stove Co. — Editor.

With a modern gas range, Madam, no smoke, no smear, no smudge.

ference in operating costs, they advocate the use of special pans.

The most recent development is the introduction of multiple speed elements to try to match the limitless speeds of the gas burner!

So, contrary to the notion the electric industry would like to promulgate, it is the *gas range* that has led and continues to lead. As the electric range has improved — and admittedly the electric range of today is a better article than the range of 10 years ago — it has taken on more and more of the performance characteristics of the gas range. And anyone who has studied and compared the two appliances cannot fail to come to this conclusion:

The only way finally that the electric range can equal the performance of the gas range is to BURST INTO FLAME!

Which brings us back to the first point you have to establish if you expect to win the battle of gas versus electric cookery. When your electric-minded friend starts talking about the comparative performance of the two ranges, you have to make sure it is a *modern* gas range he has in mind. If you can get him to admit that he has never seen a *modern* gas range in operation, the battle is about two-thirds won. For in almost every instance, you will find that belief in the superiority of electric cookery is based on *ignorance of up-to-date gas cookery, and a blind acceptance of the claims of electric appliance promoters.*

It is these claims that are always brought out when an argument starts over the virtues of the two types of cookery. There are dozens of them, and a book would be required to analyze them and refute them properly. But the ones usually encountered have to do with the cleanliness of electricity, its modernity, its ease of operation, its "coolness" and accuracy, and its time and labor-releasing features. If you know the answers to these claims, you are pretty well equipped to take care of yourself when the free-for-all begins.

"Electric cookery is cleaner than gas cookery!"

That, for instance, is one of the first and more emphatic assertions you are likely to encounter. What are the facts?

Well, first of all, just ask the other person if he has ever tried to clean an electric element after something has been spilled on it! Anyone who has tackled the job knows that it is impossible, without the expenditure of a lot of time, patience and effort, to get the thing clean; and in the meantime, if you use the element, your kitchen will be filled with smoke from the burning spilled foodstuff!

Gas burners, on the contrary, are purposely made smaller than the diameter of the average top burner cooking utensil. Thus boil-overs will run down into the catch pan beneath the burners without touching the burner itself. In addition, all CP top burners are rust-resisting, making them easy to lift out and clean. For maximum efficiency, a burner or an element should be cleaned at regular intervals. On a gas range, this job is simplicity itself; on an electric range, it can be done properly only with a great deal of bother.

As a matter of fact, cookery on a modern CP gas range is a marvel of cleanliness. The clean blue flame of the burners leaves no residue at all. The bottoms of pans are actually *scoured* with heat. Oven vents discharge *away* from the kitchen wall, which means that the discoloration which used to appear on the wall above the vent has been eliminated.

(This discoloration, by the way, is caused by the dust particles which are always present in the air of the cleanest kitchens. Agitated by heat from cooking, these particles attain a high velocity, hurling themselves against the wall surface with such force that they adhere to it. The resultant discoloration will appear on the walls of any kitchen, no matter what kind of fuel is used in cooking. It is caused by heat and dust in the vapor-laden atmosphere of the kitchen, and the inherent characteristics of either a gas flame or an electric "glow" has nothing to do with it.)

Gas burners, having an infinite number of speeds, can be controlled with the utmost precision, which enables the cook to avoid boil-overs and prevent excessive steam and greasy vapors from filling the kitchen. Gas broiling is completely smokeless, the *live* flame consuming the sooty particles of fat as they are given off from the meat.

A summary of the facts shows that the statement "Electric cookery is cleaner than gas cookery" is false, and the former will have to improve greatly to even equal the latter. Here are the points to remember:

1. CP gas burners, rust-resistant, clog-proof, are easy to clean. Their size, much smaller than the average utensil, prevents them from being "spilled on."

... Electric elements, cumbersome, difficult to remove, are hard to clean. Their size, as big or bigger than the average pan, makes them a target for anything that is spilled or splattered in cooking.

2. The clean blue flame of a properly adjusted CP burner leaves no residue, actually scours the bottom of the pan. (Test it with a clean white handkerchief if you don't believe it!)

... More often than not, clogged with foodstuff, the electric element gives off smoke which leaves soot particles on everything it touches.

3. The CP oven vent discharges away from the kitchen wall, preventing discoloration. The CP broiler is smokeless, no sooty grease particles escape into the kitchen atmosphere to form a film on the walls.

... Electric broiling produces smoke because there is no *live* flame to consume the grease particles rising from the meat. Smoke in the kitchen means uncleanliness.

4. Gas burners with their limitless number of speeds can be controlled *exactly and instantly* to prevent boil-overs and excessive steam.

... Electric elements, having, on all but the most recent and higher-priced ranges, but three speeds, are hard to control, make the danger of boil-overs a constant source of worry and trouble.

5. Modern CP gas ranges are full porcelain enamel, inside and out, making them as easy to clean as a china plate.

TABLE NO. 1. MONTHLY GAS AND ELECTRIC CONSUMPTION FOR COOKING

	Kw. Hrs. Electricity per Month	*Cu. Ft. 1120 B.t.u. Natural Gas per Month*
Small family	100	625
Medium family	125	781
Large family	150	938

. . . While the modern electric range, too, is made of porcelain enamel, the difficulty of getting at its parts makes it hard to keep clean.

"Electric cookery is cooler than gas cookery."

Here is another claim you are almost sure to encounter from an electric-minded person. The answer again is in the facts.

In the A. G. A. Testing Laboratory comparative tests mentioned above the following results were obtained:

An average temperature only 45° F. above room temperature was maintained on the outside oven surface of a CP gas range with all top burners on full and with a temperature of 500° F. being maintained inside the oven. The average surface temperature above room temperature of the electric range was nearly 58° F. under similar conditions but with the oven temperature set at 400° F. Such results speak for themselves.

And in these same tests, the gas range oven reached maximum heat in the oven in nearly *half* the time required for the electric oven, which means less cooking time and thus less heat expelled into the kitchen!

Gas burner top burner cookery, too, is necessarily cooler than electric top cookery, because:

1. The utensils cover the entire burner and thus absorb all the heat. The electric element is larger than the average utensil.

2. The burner on a gas range is on full instantly, and the heat is gone the moment the burner is turned off. An electric element requires time to heat up and time to cool off.

3. The infinite number of speeds and accuracy of control of a gas burner enables the cook to eliminate steam from the kitchen. Electric cookery, with its limited number of speeds, makes it practically impossible to prevent violent boiling.

In modern gas cookery, much cooking (notably the roasting of meats) is done at low temperatures. Obviously this contributes toward *cool* gas cookery. Similarly, accurate oven temperature control allows the baking of pies, cakes and cookies by the clock, which means that the oven door needs never to be opened between the time the pastry is inserted and the time the clock says it's done. The heat thus stays in the oven, and does not escape into the kitchen as it did when the cook had to peek and poke to see if her product was done. Perfect heat circulation, too, in the gas range oven eliminates the necessity of moving sections of a layer cake, say, from shelf to shelf so that they will be done evenly.

And here is where gas cookery is again superior to electric cookery! For due to the kind of heat used in an electric oven, the circulation is faulty and cakes *do not* rise and brown evenly unless shifted around!

Again the facts prove the fallacy of an electric industry claim: "Electric cookery is cooler than gas cookery." Let us summarize:

1. A modern CP gas range oven maintains an outside surface temperature over 10° cooler than one of the best electric ranges manufactured. (And remember: be sure you are comparing the performance of a *modern* gas range with that of a modern electric range!)

2. A gas range oven requires only about one-half the time of an electric range to reach baking temperatures, thus contributing toward a cooler kitchen in cutting down the amount of cooking time.

3. Top burner gas cookery is cooler than electric top burner cookery because (a) utensils cover the entire surface of the burner; (b) gas burners reach full heat instantly, and cool instantly; (c) ease and precision of control of multiple speed gas burner eliminates excessive steam.

4. Low temperature roasting contributes toward cool gas cookery; while perfect circulation in a gas oven eliminates peeking and poking during baking, insuring a cool kitchen. . . . Electric oven circulation is notoriously faulty.

"Electric cookery is as cheap or cheaper than gas cookery," is a third claim frequently made by electric enthusiasts. It is one of the easiest to refute.

First of all, the purchase price of an electric range runs from 25% to 100% more than the purchase price of a gas range. You would have to pay from $150 to $175 for an electric range in order to secure the cooking capacity and features that are available on a $100 gas range. In a recent demonstration in Santa Monica, Calif., a gas range which retails for $104.50 was matched against an electric range valued at $210, and the gas range proved its superiority all along the line. As a matter of fact, the difference between the initial cost of a gas range and electric range would pay for between a year and two years gas service in the ordinary household.

Moreover, there is a big item of economy in favor of the gas range in the matter of maintenance cost. A gas burner operates as efficiently at the end of its millionth hour of usage as it did at the beginning of its first. One gas range manufacturer guarantees the burner for the life of the gas range. An electric element, on the contrary, begins to wear out the minute it is turned on, and, like an electric light globe, the more it is used the less efficient it becomes, requiring more and more energy to do the same amount of work until it fails altogether. To insure maximum efficiency an electric element must be replaced at regular intervals.

Installation cost, too, must not be overlooked. In a house not already wired for electric cooking, the cost of installing an outlet for the range amounts to from $30 to $40. It would be difficult to find a house that is not piped for gas cooking.

Insofar as operating costs are concerned, all tests conducted by unbiased laboratories show that gas cookery costs, based on average rates over the nation, are approximately one-third less than electric cookery when manufactured gas is used, and one-tenth less when natural gas is used.

Operating costs of the two services can be compared only on the basis of the unit cost of gas and electricity in any particular locality. Table No. 1, established by various studies of cooking habits of a large number of families, is useful in determining the relative operating costs.

Table No. 2, prepared by the same agency, makes it possible to determine how much more it costs to cook elec-

TABLE NO. 2. RATIO OF COST OF ELECTRICITY TO 1120 B.T.U. GAS

Cost of Electricity per Kw. Hr.	*Cost of Gas per 1000 Cu. Ft.* 60c	70c	80c	90c	$1.00
4 cents	10.52 to 1	9.09 to 1	8 to 1	7.14 to 1	6.35 to 1
3½ cents	9.21 to 1	7.93 to 1	7 to 1	6.25 to 1	5.55 to 1
3 cents	7.89 to 1	6.35 to 1	6 to 1	5.35 to 1	4.73 to 1
2½ cents	6.57 to 1	5.68 to 1	5 to 1	4.46 to 1	3.96 to 1
2 cents	5.26 to 1	4.54 to 1	4 to 1	3.57 to 1	3.17 to 1
1½ cents	3.94 to 1	3.40 to 1	3 to 1	2.67 to 1	2.38 to 1
1 cent	2.63 to 1	2.27 to 1	2 to 1	1.78 to 1	1.58 to 1

trically in an average natural gas territory.

In addition, tests show that electric cookery is most efficient when special pans are used, while the size, shape or color of a pan makes no difference in the cost of operation on a gas range. The length of time required for an electric burner to warm up and cool off increases the cost of cooking when compared with gas which is on and off instantly.

Summing up, "Electric cookery is not as cheap or cheaper than gas cookery" because:

1. An electric range costs from 25% to 100% more than a gas range.

2. An electric range requires constant replacements and upkeep, while a gas range seldom needs repair.

3. Installation cost of an electric range frequently amounts to from $30 to $40, while a gas range is generally installed free.

4. Gas cookery by actual tests costs from one-third to one-tenth less than electric cookery.

"Electric cookery is simpler than gas cookery."

This claim, a favorite one with those who have never cooked on a modern gas range, has no real basis in fact. While automatic time and temperature controls, automatic ignition and other convenience features are common to both types of range, in the operation of them the user finds those on the gas range simpler and less time-consuming.

In top burner cookery, for instance, instant ignition and perfect control of a limitless number of speeds reduces the time and attention required in any cooking operation. As an illustration, the frying of hot cakes on an electric range is made very difficult due to the fact that the limited number of temperatures available have to be constantly adjusted to secure even an approximation of the correct heat; while the exact temperature needed can easily be secured and maintained on a gas range. The electric people, too, advocate using "stored heat," meaning the after-glow of the element as it cools off, and certainly an effective use of this otherwise wasted energy would not add to the simplicity of top cookery.

Oven cookery is simpler and more effective on the gas range than on the electric range because the gas temperature control is of the continuous type, insuring a smooth, even maintenance of the required temperature in the oven; while the electric control is of the "stop" and "go" type, allowing a variation above and below the temperature set averaging from 18° to 25°. Imperfect circulation in the electric oven necessitates constant watching of pastries, for instance, while they are baking; whereas the perfect circulation of the gas range oven makes cooking by the clock the rule rather than the exception.

The speed of the gas burner and the fact that it is smokeless makes gas broiling much simpler than electric boiling. More and more gas users are employing this simple, healthful method of cooking for all sorts of foods including meats, vegetables and fruits. The difficulty and time required to broil properly on an electric range prohibits anywhere near as effective an employment of the broiler as is enjoyed on a gas range.

And the dependability of gas service as compared with electric service must be mentioned in comparing the simplicity of the two. Interruption of the gas supply is an almost unheard-of thing. Interruption of electric service is a very common occurrence, as anyone who thinks back over the matter can himself testify. Having to wait for the resumption of service or find a substitute way of preparing meals certainly does not add to the simplicity of life in a household where electric cookery is employed.

So to the assertion that "Electric cookery is simpler than gas cookery" these facts may be cited to prove the contrary:

1. With instant ignition, perfect control of multiple speeds, gas top cookery is much more simple and accurate than electric top burner cookery.

2. Perfect circulation and continuous thermostatic control makes gas oven cookery far superior to electric oven cookery — simpler, more certain, less time-consuming.

3. Speedy smokeless broiling is a feature of the gas range that the electric range cannot duplicate.

4. And the dependability of gas service as compared with the frequent interruptions to electric service adds to the simplicity of life in a household using gas cookery.

In conclusion, it is a nationally accepted fact that the modern housewife, who insists upon the latest and most approved methods and equipment for preparing her family's meals, inevitably seeks out the modern gas range. Since its creation and acceptance in the several years past, there is no cooking appliance that has more modern features than the Certified Performance gas range. And the increased acceptance of the gas over the electric range is not only proof of the modernity of the gas range, but also of the fact that Mr. and Mrs. American Public want in their home only the most modern cooking equipment. What further proof of this last statement is there than the fact that sixteen million modern American families are "cooking with gas"!

■ ■

CALENDAR

October

American Gas Association — Annual Convention, Atlantic City, N. J., week of October 7.

A. G. A. Combined Industrial Gas Exhibit, 1940 National Metal Congress and Exposition — Cleveland, Ohio, October 21-25.

Independent Petroleum Association of America — Dallas, Texas, October 16-18.

National Safety Congress and Exposition — Stevens Hotel, Chicago, Ill., October 7-11.

New England Gas Association, Operating Division—Hotel Bond, Hartford, Conn., October 23.

Public Utilities Association of West Virginia — Twenty-second Annual Meeting, The Greenbrier, White Sulphur Springs, October 4-5.

November

American Petroleum Institute — Twenty-first Annual Meeting, Stevens Hotel, Chicago, Ill., November 11-15.

Mid-Southeastern Gas Association—Annual meeting, State College, Raleigh, N. C., November 14-15.

Mid-West Gas School and Conference — Iowa State College, Ames, Iowa, November 11-13.

December

Fourteenth National Exposition of Power and Mechanical Engineering—Grand Central Palace, New York, December 2-7.

National Association of Railroad and Utility Commissioners — Miami, Fla., December 10-12.

National Industrial Council — Waldorf-Astoria Hotel, New York, N. Y., December 9-10.

A. G. A. Testing Laboratories Start Inspection Program

The American Gas Association Testing Laboratories began, October 1, their annual inspection program of more than 500 producers of gas equipment.

These annual inspections are for the dual purpose of ascertaining whether production models of approved appliances and listed accessories conform with those originally submitted to the laboratories for test, and to afford manufacturers the opportunity of obtaining approval of products that incorporate similar construction to previously tested basic models, it is stated. Special inspections are conducted during the year in manufacturers' plants and relatively few changes of minor nature have been found necessary.

The news release also indicates that some 30 companies submitted their equipment for test to the laboratories for the first time during the past year.

■ ■

Post Office Is Gas Heated

The Cushing, Okla., post office will be heated with gas instead of coal this season, according to confirmation received by T. A. Holland, postmaster. The contract was signed by the Consolidated Gas Utilities Corp., Oklahoma City, Okla., and the United States postal department.

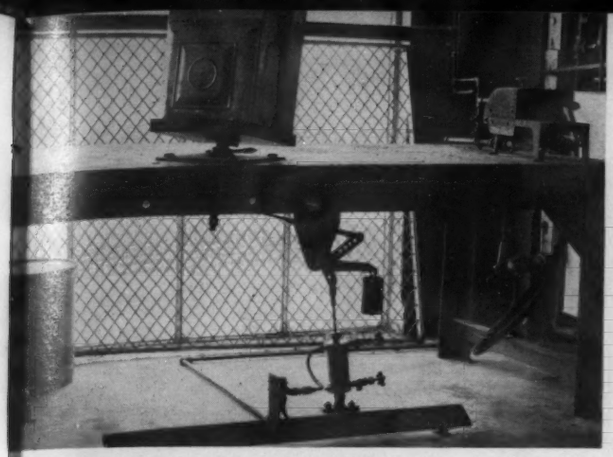

FIG. 1.

FIG. 2.

FIG. 3.

By HENRY S. HARRIS
Southern California Gas Company

New Equipment for Meter Maintenance

THIS paper describes some new methods and equipment used in the meter shops of the Southern California Gas Co. It is published with the hope that some of the devices illustrated will be of interest to meter repairmen in other shops. In most cases the illustrations are self-explanatory.

The conventional method of topping tin meters is to use a wood block or other support to set meter at an angle whereby the solder will flow into the V-shaped crevice thus formed.

Fig. 1 shows a topping machine built for this purpose. The meter is placed on a revolving table, which is revolved in 90° increments through a lift that is powered by an air piston. Along the floor will be noted a long foot pedal, so constructed that the operator may revolve the table without his having to be in any set position.

Fig. 2 shows a peculiar wedge-shaped soldering copper for removing old style back plates from tin meters. It may be seen that with such a soldering copper the inside corners of the meter are made readily accessible.

In the conventional method of painting meters with the aid of a spray gun the meter is placed on its back with a guard over the index glass. After painting as much as possible of the meter in this position, it is placed upright, and the painting job completed. In such an operation, it is obvious that to remove the index glass guard and place the meter in an upright position, the operator must hang up his spray gun. Fig. 3 shows a method of painting the meter in one operation. The guard shown over the index glass is held in place with a rubber suction cup. The operator can then tip the meter with one hand while he paints the bottom of the meter, then permit the meter to return to an upright position.

In connection with painting meters, we have found that considerable time may be saved by the use of "Boothmask" in place of the customary greased paper. Boothmask is advisable only when sufficient painting is done to build up a paint film thick enough to prevent the drying of the Boothmask. Fig. 4 shows a heavy film of paint removed from the Boothmask.

Fig. 5 illustrates a bench for topping Sprague meters designed to hold the meters at a convenient working height. This bench will accommodate 12 meters. In one of our smaller shops the topping bench was built to hold only 6 meters. An electric screwdriver is also illustrated, which is shown in operation in Fig. 6. These screwdrivers are of the torque clutch type and make up each screw to approximately the same tension. The use of these electric screwdrivers over the former hand screwdrivers has practically eliminated breakage of castings, and has eliminated considerable flange leakage at the submersion test.

In Fig. 7 may be seen a similar bench and equipment. In the foreground will be noted a steel jig to hold the meter, which we find more satisfactory than the former wooden holders. Directly in back is a sheet metal bin for stocking the various size screws and diaphragm nuts used in the assembly. The small round cup in the foreground contains the diaphragm pins. In the background and to the right is a container for diaphragm and flange gaskets, and to the left diaphragms in a container to catch any oil which may drain from the diaphragms. To the extreme left can be seen a container for diaphragm tins or discs.

Fig. 8 shows benches for the removal and installation of Sprague main movements. If the reader will compare this illustration with Figs. 5 and 6, he will note the different heights of the benches, which are so constructed as to accommodate the work being performed. Directly above the benches are the new type fluorescent lights, which give some 10 times the illumination formerly given by mazda lamps. Because they radiate virtually no heat these lamps may be installed directly over the head of the operator.

Figs. 9, 10, 11 and 12 depict various jigs used for the repairing of Sprague meters. While additional jigs are used, those shown are some developed in our shop by H. A. Gregory, meter inspector, and are described here because they are not in common use. Fig. 9 shows a gage to leave the center post of the main movement at its proper height. With reference to the conven-

PROBABLY THERE is no phase of operation in the gas industry involving greater mechanical detail and handling and assembling of a larger volume and variety of parts than in the gas meter repair shop. Consequently, ingenuity in development of improved technique and labor-saving devices pays high proportionate dividends. Readers of GAS will therefore be interested in the paper, "New Meter Repair Equipment," which was presented by HENRY S. HARRIS, Southern California Gas Co., Los Angeles, at the 47th Annual Convention of the Pacific Coast Gas Association in Coronado, Calif., September 18-20, 1940. Mr. Harris is well qualified to discuss the matters contained in this paper, having graduated in chemical engineering from Northeastern University in 1925. His first position was assistant chief chemist of the New England Fuel and Transportation Co., at Everett, Mass. In 1926 he was affiliated with the Gas Distribution Department of the Los Angeles Gas & Electric Corp., and in 1934 was placed in direct charge of displacement meter activity for that company. When the Los Angeles Gas & Electric Corp. merged with the Southern California Gas Co. in 1937, Mr. Harris was appointed meter shops engineer to supervise meter and regulator repairs for So. Calif. Gas Co. — Editor.

H. S. HARRIS

tional method of installing main movements, one may probably minimize the importance of this jig. In our method of installation instead of threading the main movement into the center casting until the center post reaches the proper height we run the main movement in to a definite distance in order to center the main movement and the excess center post is then cut off. The jig used for this purpose simulates the height of the valve seat, thus leaving the post at the correct position. One end of the jig is for No. 1A Sprague meters, and the other No. 1 meters. Please observe that at the point at which the operator grips the jig, considerable height is given to the tool so that in the event the hacksaw slips it will not injure the operator's hand.

Fig. 10 is a jig which has a two-fold purpose. The back part of the jig, which cannot be seen in the illustration, is up against the flanged portion of the crank and lines up through that part of the crank which holds the volume adjustment, to determine if the angle of the crank is correct. In addition to that which may be seen in the illustration there is a stop against the volume adjustment button, and in the assembly of the meter the adjustment button is run out to that point so that the prover operator will receive all meters with the volume adjustment in the same relative position.

Fig. 11 shows a jig for lining up the diaphragm carrier wires. As you look at the illustration the post on the left represents the side carrier bracket while the post on the right represents the position in which the wire would pass through the meter at that particular point. When the wire is pushed into the jig the correct height is determined by the small shelf shown. The correct length of the wire is determined by its falling into the impression shown, also it is assured that both ends of the wire are perpendicular to each other. In the lefthand post will be noted a hole

FIG. 4 (left): A heavy film of paint, thick enough to be removed from "Boothmask."

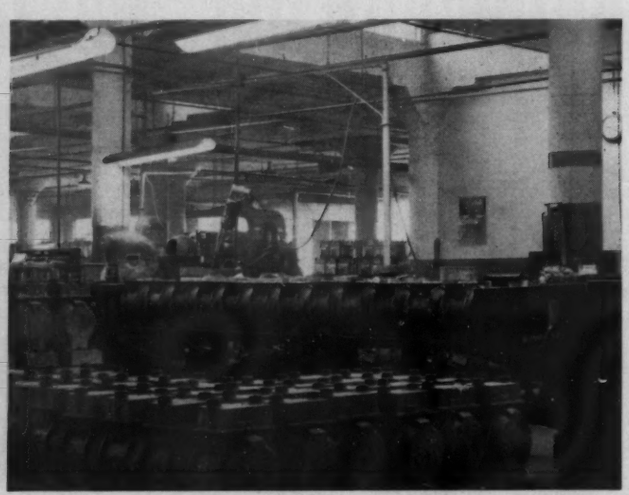

FIG. 5 (right): Bench for topping meters holds them at easy working height.

FIG. 6 (left): Torque clutch type electric screwdriver makes each screw to same tension.

FIG. 7 (right): Steel jigs, as in foreground, replace old wooden ones.

FIG. 8 (left): Benches for removal and installation of main meter movements.

FIG. 9 (right): Gage on jig leaves center post of main movement at proper height.

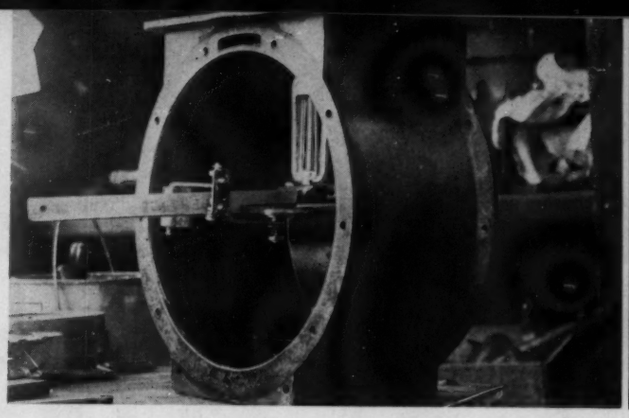

FIG. 10 (left): This jig standardizes relative position of volume adjustment.

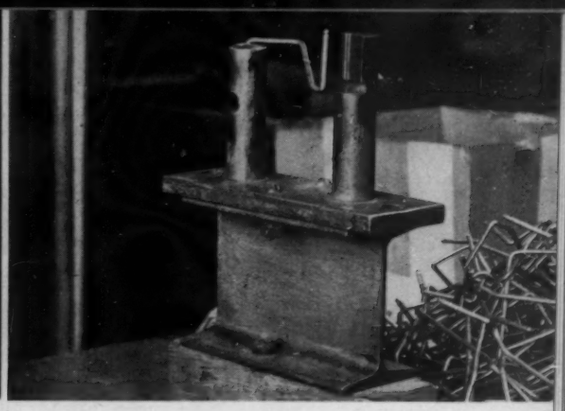

FIG. 11 (right): Diaphragm carrier wires are lined up on this jig.

FIG. 12 (left): Height gage eliminates guesswork from assembly.

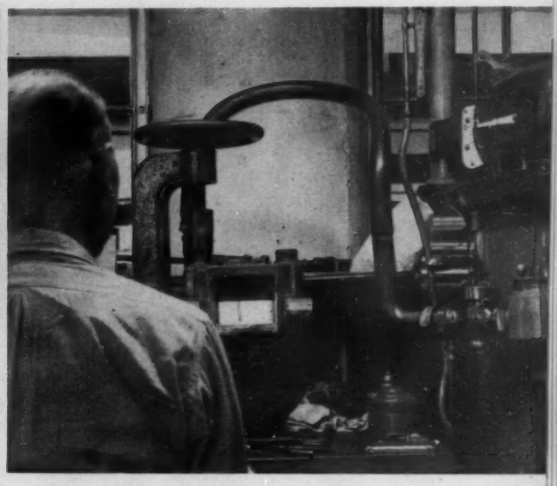

FIG. 13 (right): "Fine readers" on provers save eyestrain by magnifying scale four to one.

FIG. 14 (left): Posture chairs permit more sitting for prover operators.

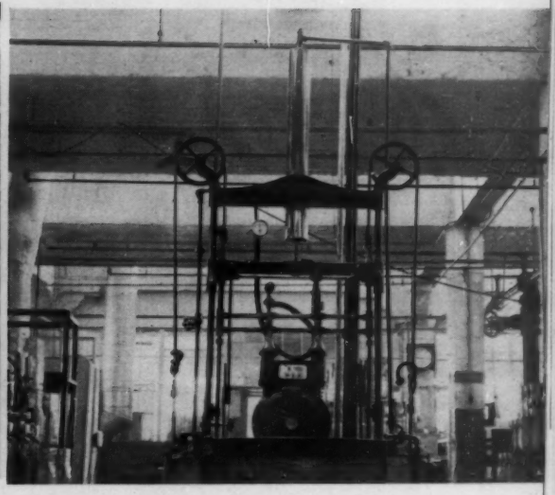

FIG. 15 (right): Old style testing tank, converted to air pressure operation.

through the post. This is in the event small particles scrape off the wire when inserted into the jig so they may deposit in the hole and then be removed.

Fig. 12 shows a height gage, which takes the guess work out of the assembly when matching the top of the valve cover to the index driving movement flag. In most shops it is customary to hold the top on the meter and shake the meter in order to determine the clearance. In the position shown by the illustration the jig is determining the valve cover height after having been inserted upside down in the cover of the meter to determine the position of the flag. If the valve cover is found to be too low or too high the situation is remedied by using a valve cover of a different height. If very much too low two top gaskets are employed.

In order to avoid as much eye strain as possible as well as to aid in the elimination of errors we have installed so-called fine readers on nearly all our provers, as shown in Fig. 13. This instrument is an adaptation of one suggested by the American Meter Co., and magnifies the prover scale approximately 4-to-1. It eliminates the necessity of the operator leveling his eye with the prover scale and the pointer.

Fig. 14 shows one of the new posture chairs recently put in use for prover operators. In general, where prover operators are permitted to be seated when proving meters they use stools, boxes or some makeshift chairs.

In Fig. 15 is shown an old type hydro-pneumatic meter testing tank. This tank has been converted from manual operation to air pressure operation by installing the piston, as shown, releasing the lock catches on the shafts and increasing the counter weights.

THE PACIFIC COAST GAS ASSOCIATION'S

Convention at Coronado

SEVEN Hundred Ninety Two — a new attendance mark — and every delegate had a swell time and acquired a bit of information to boot — that was the record set by Pacific Coast Gas Association's 47th Annual Convention held at Hotel Del Coronado at Coronado Beach, Calif., September 18-20, 1940.

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P. C. G. A. President A. E. Holloway of the San Diego Consolidated Gas & Electric Co., Managing Director Clifford Johnstone, and General Convention Chairman D. H. Perkins formed a team that brought precision and showmanship to the entire program, and as a result every session played to capacity audiences. From the first event on the Wednesday afternoon General Session, when the Women's Committee of the San Diego company presented a toast to San Diego to the last putt of Saturday's golf tournament, the meeting set a tempo that kept the delegates both happy and hopping.

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The setting for the convention was ideal — the ancient, tradition-drenched Hotel Del Coronado, surrounded by colorful flowers and wavering palms, gave a holiday atmosphere to even the most stringently business-like proceedings of the Convention. The welcome to Coronado was presented by W. F. Raber, president of the San Diego Consolidated Gas & Electric Co.

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Last August, the nomination of R. A. Hornby, vice president of the Pacific Lighting Corp., for the presidency of the P. C. G. A. was reported in *GAS*. This was confirmed by the election of Mr. Hornby at the Wednesday afternoon General Session. Swept into office with him were:

Vice president: W. G. Vincent, vice president and executive engineer, Pacific Gas & Electric Co., San Francisco, Calif.

Treasurer: D. G. Martin, general auditor, Pacific Gas & Electric Co., San Francisco.

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WALTER C. BECKJORD, president of the American Gas Association, stated that investment in the gas industry is on the order of $5.00 to $1.00 gross, so that 5% of the gross spent on new business and promotional work is only 1% per dollar invested for the industry's entire promotional expense. This is in contrast with the automobile industry, which expends 17% for advertising alone. It would be better to spend more money on new business to increase sales and on research for new applications of gas and for their development than on some of the capital investments that have been made.

• • •

Wednesday night, Wendell Willkie, G. O. P. Presidential candidate, was scheduled to speak at the San Diego baseball field. As a former utilities executive, as well as Presidential aspirant, Mr. Willkie, naturally, drew a large number of the delegates to his meeting at the San Diego baseball field.

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A. E. HOLLOWAY, president, Pacific Coast Gas Association, at the 47th annual convention of that association: "*... We now find ourselves in a world where a majority of the population is already at war, using new mechanical methods for destruction ... I ask that each one of you give sincere study to events and legislation that affect our form of government and our personal freedom, in order that you may take a sound and determined stand on matters that have to do with our future welfare. It is no time to allow other people to do your thinking ...*"

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A distinguished speaker at the Friday morning general session was Bernard T. Franck, vice president of the Milwaukee Gas Light Co. and chairman of the A. G. A. Refrigeration Committee.

• • •

J. H. GUMZ, Pacific Gas and Electric Co., in discussing "Long Range Planning for Profitable Business Building": "*... Application of a little common sense and logical reasoning seems to indicate that there is just as much justification for long-range sales planning as there is for long-range managerial planning of physical facilities for the rendering of utility services ...*"

• • •

It is impossible in the brief space allotted to give credit to all those who made the convention a success. However, the delegates gave much applause to the section leaders: Harry J. Smith, Technical; A. F. Rice, Sales and Advertising; Ray G. Logue, Manufacturers'; J. S. Spaulding, Cooperative Advertising, Charles Grunsky, Accounting; Harrison Musgrave, Educational; and Prudence Hury, Women's Committee. Nor must the many San Diego General Convention Committee members who played such an important part in making the delegates comfortable be forgotten. These include: Charles Davies, Ray C. Cavell, H. G. Dillin, F. M. Raymond, R. J. Phillips, William de Waard, C. D. Weiss, and R. A. Edwards.

• • •

J. J. Delaney of Reliance Regulator, chairman of the Golf Committee, reported excellent participation in the tournament Saturday morning. Low net prize was won by Ralph Bell; low gross by C. L. Clauson. Others to win golf awards were: C. A. Estey, C. E. Steele, Ed Hinchey, A. B. Allyne, R. Ames, Guy Corfield, A. L. Spring, H. W. Edmund, I. E. McKinley, J. H. Gumz, and C. L. Clauson.

• • •

E. L. PAYNE, Payne Furnace & Supply Co., Inc., in discussing "Gas Heating in the Four Big Jobs": "*... At the present time the Natural Gas Bureau Testing Laboratory is completing a test house at Los Angeles for research purposes. The house is a typical six-room home with living room, dining room, kitchen, three bedrooms, and a bath, having a floor area of 1250 sq. ft., a cubical content of 10,300 cu. ft., and a heat loss as calculated by one heating firm of 51,800 B.t.u. per hour. The plans were submitted to four different heating contractors for layouts, and provisions were made to conduct tests on all four layouts with their various register locations ...*"

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"The Lyrical Gasconade," a musical show built around the beauty and sales advantages of the CP Range, stopped the show at the Friday morning General Session. The program was presented under the direction of Marguerite Scroggie, chairman of the Home Service Committee of the Sales and Advertising Section. The co-authors of "The Lyrical Gasconade" were Miss Scroggie and Frances Brewer, who, together with Joy McCambridge and Peggy Jett of San Diego, completed the cast. Miss Scroggie's committee received a framed certificate of honor from the Awards Committee for the excellence of the presentation.

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L. C. OLPIN, Mountain Fuel Supply Co.: "*... Of what advantage is the new natural gas classification to a utility which previously was operating under an approved former classification? None whatever. It is a decided detriment, as it causes the utility not only vast and sometimes useless expenditures of money*

in reclassifying property accounts, but causes it to lose the value of comparative operating statistics and other valuable information developed during previous year . . ."

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On Friday night the delegates crowded into the banquet hall to hear President A. E. Holloway award the Addison B. Day medal of honor to F. M. Banks, vice president of the Southern California Gas Co., for his important part in the initiation and promotion of the Certified Performance gas range program. F. A. Hough, chairman, announced the decision of the Awards Committee. The Basford trophy to the Sales and Advertising Section, A. F. Rice, Occidental Stove Co., chairman.

The following papers were given the honorable mention award:

• • •

Sales and Advertising Section: To J. H. Gumz, Pacific Gas and Electric Co., "Long Range Planning for Profitable Business Building."

Technical Section: To H. J. Keeling, Southern Counties Gas Co., "Equipment and Methods for Cathodic Protection Surveys."

To C. G. Cortelyou, T. J. V. How and F. H. Noltimier, General Petroleum Corp., "Modernizing Our Older Gas Compressing Equipment."

To Industrial Fuel Supply Co. for its study of the design of permanent river crossings for gas transmission lines and rapid installation of emergency crossings under disaster conditions. The four papers included in this study were:

1. Robert T. Knapp, associate professor in hydraulic engineering, California Institute of Technology, "Pipe Line Stream Crossings."
2. Le Roy Edwards, president and general manager, Industrial Fuel Supply Co., "Pipe Line River Crossings."
3. R. W. Todd, field engineer, and A. B. Polley, Industrial Fuel Supply Co., "Construction of Submerged River Crossings."
4. M. L. Fort, general superintendent, Industrial Fuel Supply Co., "Emergency Equipment, Materials and Organization."

Accounting Section: To the executive committee of the Accounting Section for its work on a reclassification of accounts for natural gas companies. Charles Grunsky, Coast Counties Gas and Electric Co., chairman.

• • •

W. H. VOGAN, American Gas Association Testing Laboratories, in discussing Laboratories' Progress Reflects Sound Consumer-Industry Relations, says: "*. . . A record was established this year when 13 new and revised requirements were adopted as American standard. This should stimulate construction of new models embodying latest improvements in construction and performance and becomes self-evident when one stops to realize that since the inception of the Laboratories' standardization program 15 years ago, more improvements and developments in domestic gas appliances have been made than in the previous 50 years . . .*"

• • •

The women found little time to be anything but busy. Three events crowded the Wednesday afternoon and evening program, a reception and tea in the afternoon and an entertainment and dance in the evening. On Thursday the ladies were served luncheon at the hotel pool, being entertained by an aquatic exhibition. Bridge, tennis and swimming followed. On Friday afternoon the Convention ladies toured Coronado and the U. S. Naval Air Station on North Island.

• • •

Under the direction of Chairman E. M. de Remer, of the Southern California Gas Co., the skeet tournament was held Saturday morning at the San Diego Naval Base on North Island. The Basford Cup was won by Ollie Owens and J. G. Brown. In individual competition, the score was: First gun, Ollie Owens; second gun, Charles Kirksey of Santa Cruz; third gun, tie between J. G. Brown and Stuart Donaldson of the Southern California Gas Co.; fourth gun, Chairman de Remer.

• • •

A novel feature of the convention was the Manufacturers' Section luncheon on Thursday, held under the direction of Chairman R. G. Logue. J. J. Delaney, chairman of the Nominating Committee, presented the following slate of officers, which was unanimously elected:

Wayne R. Smith, Continental Water Heater Co., general chairman.

C. O. Menig, Pacific Gas Radiator Co., general vice chairman.

Accessories Division: Hal Singleton, Grayson Heat Control, chairman; Alvin W. Ray, General Controls, vice chairman.

Direct Heating Division: Roy Ohnimus, Hammer-Bray Co., chairman; L. E. McIlveen, Unimatic Heating Systems, vice chairman.

Furnace Division: C. H. Pill, Hammel Radiator Corp., chairman; W. H. Johnston, Fraser & Johnston Co., vice chairman.

Range Division: E. J. Hinchey, James Graham Manufacturing Co., chairman; A. F. Rice, Occidental Stove Co., vice chairman.

Water Heater Division: W. A. Cartter, Day and Night Water Heater Co., chairman; E. S. Hoyt, Jr., Hoyt Heater Co., vice chairman.

• • •

The women of the Southern Counties Gas Co. this year prepared a very complete and artistically compiled year book, and for the excellence of their work were awarded the $25 cash prize which was presented by Prudence Hury, chairman of P.C.G.A. Woman's Committee. Elizabeth Ash was chairman of the Southern Counties Gas Committee, which included Betty King and Betty Rudolph.

• • •

Among the distinguished guests at the Convention were: R. S. Agee, sales promotion manager for the CP Range for the A.G.A.E.M.; F. L. Fairchild, president of the Sprague Meter Co.; Alan D. MacLean and Paul C. Kreuch of the Pittsburgh Equitable Meter Co.; L. C. Olpin of the Mountain Fuel Supply Co.; and J.W. West, Jr., secretary to the Commercial Section of the A.G.A.

• • •

President-elect R. A. Hornby to date has appointed the following section chairmen for the coming year:

C. P. de Jonge, San Diego Gas and Electric Co., Technical Section.

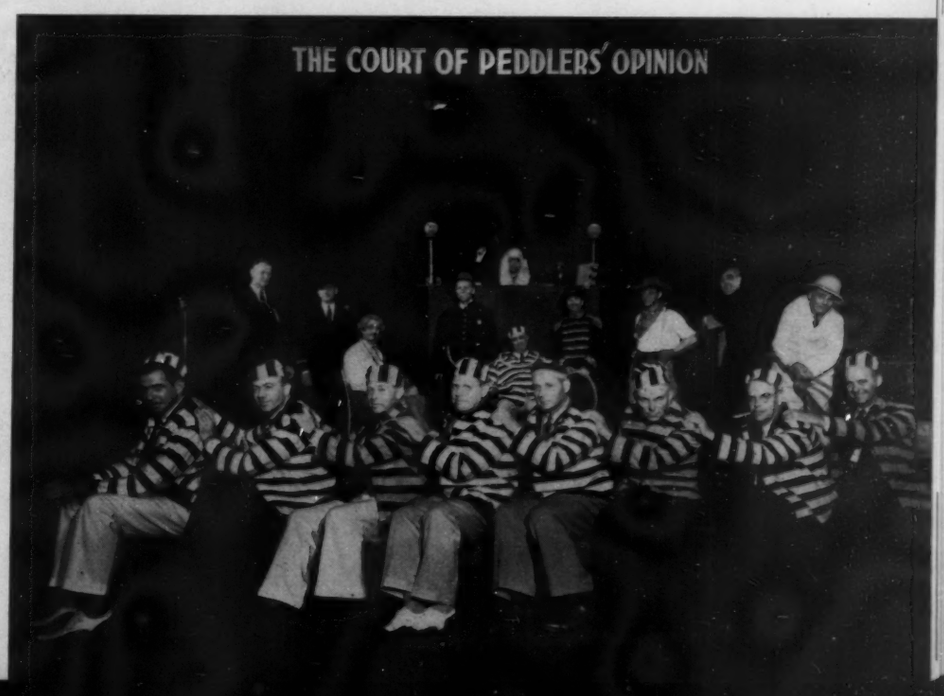
O. R. Doerr, Pacific Gas and Electric Co., Sales and Advertising Section.

S. W. Binckley, Southern California Gas Co., Accounting Section.

Prudence Hury, Southern California Gas Co. Woman's Committee.

It is expected that the 1941 convention will be held in Del Monte.

"The Court of Peddlers' Opinion," a unique play, featured the Manufacturers' Section entertainment program on Thursday night. Among the cast were: Judge, **Wayne Smith**, Continental Water Heater Co. STANDING (left to right): Clerk, **Al Joy**, Pacific Gas & Electric Co.; Clerk, **J. J. Delaney**, Reliance Regulator Co.; Policeman, **W. G. Cartter**, Day & Night Water Heater Co.; Bailiff, **Hal Singleton**, Grayson Heat Control; Prosecutor, **Al Rice**, Occidental Stove Co.; White Wings, **Elroy Payne**, Payne Furnace & Supply Co. SEATED: Clerk of Court, **R. W. Campbell**, American Stove Co.; Prisoner with rope around neck, **A. E. Holloway**, San Diego Gas & Electric Co.; Prisoners in row (left to right): **Milton Sanders**, Central Arizona Light & Power Co.; **R. G. Barnett**, Portland Gas & Coke Co.; **R. E. Fisher**, Pacific Gas & Electric Co.; **N. R. McKee**, Southern Counties Gas Co.; **W. H. Vogan**, American Gas Association Testing Laboratories; **Harvey Edmund**, Coast Counties Gas & Electric Co.; **J. F. Pollard**, Seattle Gas Co.; and **F. M. Banks**, Southern California Gas Co. **Al Joy** wrote the play.



The Camera Cl
F. WAGNER
Parkhill-Wade
DAVID PURRINGTON
Standard Oil Co. of California
WALTER THRALL
Reliance Regulator Corp.
A. N. KERR
Imperial Gas Co.
JOHN DIEHL
American Meter Co.
E. P. MILLIKIN
American Stove Co.
ARTHUR BRIDGE
Southern Counties Gas Co.
W. H. YOGA
A. G. A. Testing Laboratories
ERIC A. HOUGH
rn California Gas Co.
F. K. LAWSON
George D. Roper Corp.
R. E. FISHER
Pacific Gas & Electric Co.
OTTO MAUTHE
Southern California Gas Co.
C. A. MILLER
Servel, Inc.
OTTO GOLDKAMP
San Diego Gas & Electric Co.
The Ladies W
Coronado H
MRS. HAROLD HOWARD
Republic Steel Corp.
MRS. ARTHUR GELDNER
Republic Steel Corp.
MRS. W. H. NOBLE
Republic Steel Corp.
GEORGE P. ECKTON
H. R. Basford Co.
CHARLES D. WEISS
San Diego Gas & Electric Co.
F. M. BANKS
Southern California Gas Co.
H. M. THOMAS
Northwest Cities Gas Co.
JOHN WEST
American Gas Association
FRANK C. PACKER
E. H. ROSEBERRY
Sprague Meter Co.
F. F. FAIRCHILD
Sprague Meter Co.
FRANK MORGAN
H. R. Basford Co.
CHARLES D. WEISS
San Diego Gas & Electric Co.
A. B. ALLYNE
California Railroad Commission
S. W. BINCKLEY
Southern California Gas Co.
VAN E. BRITTON
Pacific Gas & Electric Co.
RAY LOGUE
Ward Heater Co.
PETE FLUOR
The Fluor Corp., Ltd.
BASFORD
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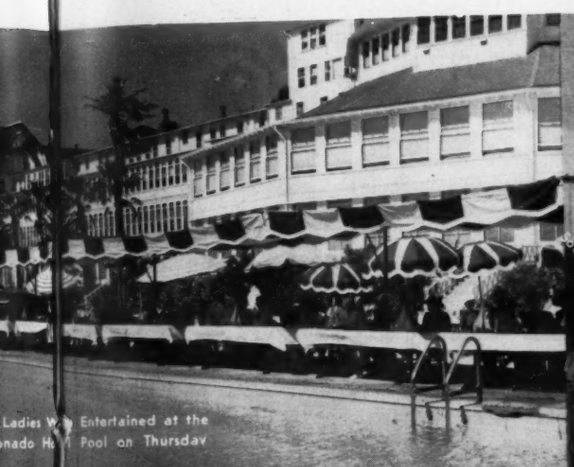
Clicks at Coronado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Equipment and Methods for CATHODIC Protection Surveys

By HARRY J. KEELING

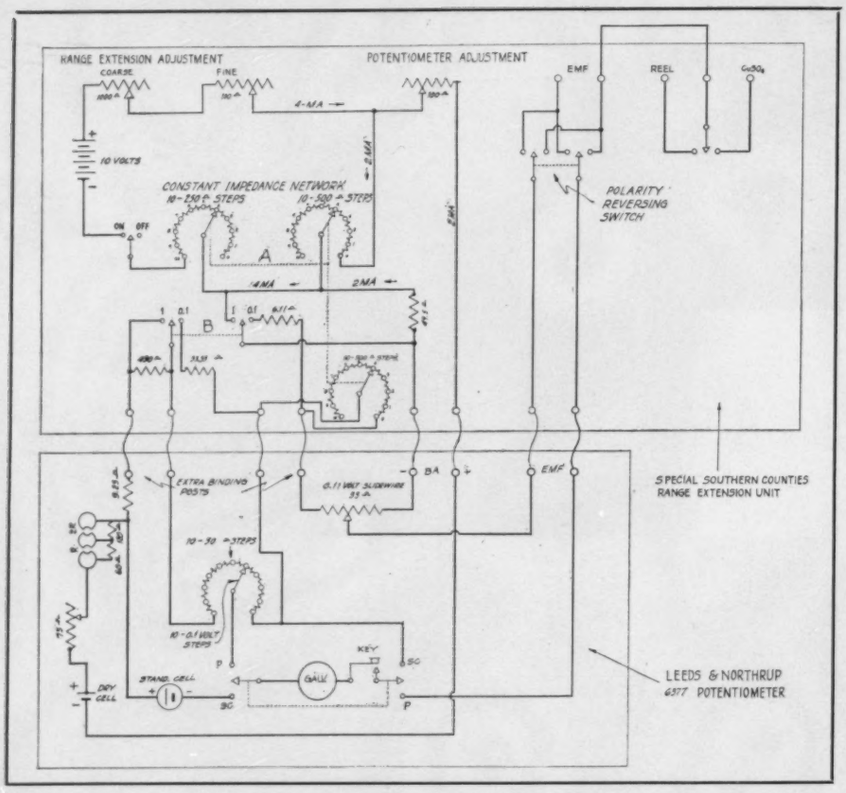


FIG. 1. Shows the schematic wiring diagram of the special potentiometer range extension unit.

SOME of the special test equipment designed and constructed by the Southern Counties Gas Co. for cathodic protection use consists of a potentiometer unit, and intercommunicating telephone sets. Although this equipment was developed primarily for cathodic protection surveys, an attempt was made to include features which would be useful for other testing work.

Fig. 1 shows the schematic wiring diagram of the special potentiometer range extension unit. This instrument was built to fill the need for a medium-priced portable potentiometer with a range higher than two volts. It was found that the maximum 1.1 volt range of a portable potentiometer which was used in determining the potential between the pipe line and the soil, was not great enough to allow readings to be taken close to the drainage stations. The range extension adds a total of 10 volts in one-volt steps to the normal range of the potentiometer without changing its sensitivity or accuracy, by introducing a bucking voltage in series with the potential to be measured, so that the potentiometer only measures the difference between these two voltages. An additional switch on the equipment shunts the potentiometer so that all readings may be multiplied by 0.1. This shunt does not give any increased accuracy on low readings, but is provided to make the instrument easier to read when taking a number of potential readings near one or two millivolts, as is done for instance in testing insulated flanges in a main line.

The special potentiometer unit is assembled in a wood box housing the necessary switches and resistors, etc., mounted with sponge rubber inside a wood carrying case. The potentiometer is carried in a padded compartment and may be readily removed if it is desired to use the instrument separately. This feature makes it unnecessary to carry the entire instrument if the potentials to be measured are less than 1.1 volts.

The potentiometer was modified by the addition of four extra binding posts to give access to the internal circuit when the instrument is used with the range extension unit. These binding posts are shorted out with copper links when the potentiometer is removed from the padded compartment in the large case and used separately.

The resistors used in the range extension were adjusted by the manufacturer to an accuracy of .01%. As is apparent from an examination of the schematic diagram, Fig. 1, the circuit is arranged so that there is always the same current drain on the 10 volt range extension battery. Once the range extension unit has been balanced against the standard cell at any point in its range, the selector switch may be moved to any other position without having to rebalance again. If less precise resistors were used, it would be necessary to rebalance the range extension at different positions of the voltage selector switch. The stability of this instrument is so good that after it has been turned on long enough for the battery to become stabilized, it is only necessary to rebalance it once every two or three hours.

A polarity-changing switch, a circuit selector switch, a clock, and a small compartment for storage of test leads, etc., are incidental features which were included to make the instrument more useful. The two output terminals of the potentiometer unit have contrasting colors, and the reversing switch directly below them points to the positive terminal. The clock on the instrument panel is one designed for use in an

HARRY J. KEELING

Though cathodic protection is now a well-established means of controlling corrosion of pipe lines, and is used more or less generally throughout the country, engineers responsible for installation and maintenance still find it desirable to develop, or at least to adapt, testing apparatus to their particular use. Interesting examples of such instrumentation are given in the following excerpts from the paper "Equipment and Methods for Cathodic Protection Surveys," presented by Harry J. Keeling, Southern Counties Gas Co., Los Angeles, Calif., to the 47th Annual Convention of the Pacific Coast Gas Association in Coronado, Calif., September 18-20, 1940. Mr. Keeling attended the California Institute of Technology, obtaining the degree of Bachelor of Science in Engineering in 1929, and Master of Science in Mechanical Engineering in 1930. From 1930 to 1940 he was a designer for the Southern Counties Gas Co., becoming assistant distribution engineer in 1940. His activities include the supervision of the design, installation, testing and operation of cathodic protection stations; the design, manufacture, and maintenance of electric telemetering and remote control equipment; and the maintenance and operation of radio communication equipment. An active member of various P. C. G. A. Technical Section committees, Mr. Keeling has also written numerous articles for magazines and has presented many papers at the Pacific Coast Gas Association conventions.

Method for PROTECTION SURVEYS

Southern Counties Gas Company

FIG. 2.
Arrangement of equipment in observer's truck showing telephone set strapped to potentiometer unit.

automobile and consists of a watch mounted in a rubber suction cup.

This potentiometer range extension was built in 1935, and at that time, no manufacturer could be found who was willing to construct it for us. No standard instrument which would measure potentials of two volts or more without drawing a current from the circuit could be found.

In cathodic protection tests involving the measurement of potential between pipe line and soil, it is necessary, of course, that the potential measuring instrument does not draw any current from the circuit, since this would cause polarization errors. In 1935, the only suitable instruments with a range over 2 volts were extremely sensitive voltmeters having internal resistances of from 0.25 to 1 megohms per volt. Subsequently, due to the popularity of cathodic protection, instrument manufacturers have supplemented these with vacuum tube voltmeters, and potentiometer voltmeters which have infinite resistance.

If the potential is changing quite rapidly, as is the case if stray or long line currents are present, it is necessary to use an instrument of the high resistance voltmeter type, or perhaps a self-balancing vacuum tube voltmeter. The potentiometer is not as useful for this type of work since it cannot follow a rapidly changing or reversing potential. It has been our experience that such erratic potentials are seldom encountered in cathodic protection testing; therefore, a potentiometer is quite suitable for this purpose. We feel that the potentiometer possesses several inherent advantages which makes it superior to other substitute instruments:

1. The potentiometer draws no current from the circuit under test; therefore, there is no possibility of error due to resistance of clips, leads and probes, etc.

2. The potentiometer is very rugged and does not contain bearings which might be damaged by vibrations or shocks. The only delicate part of the potentiometer is the galvanometer which is quickly replaceable in the field if damaged, and at a cost of only a few dollars.

3. The potentiometer is permanent in its calibration It does not depend upon magnetism, springs, or bearings for its accuracy. Replacement of the galvanometer element does not change the calibration.

4. The potentiometer has a longer scale length than is possible with the voltmeter type instrument. The 1-millivolt scale divisions on the poteniometer are the same size in the 10-volt range as they are in the 1-volt range. This feature permits increased speed and accuracy in taking readings. readings.

A photograph of this instrument is shown in Fig. 2.

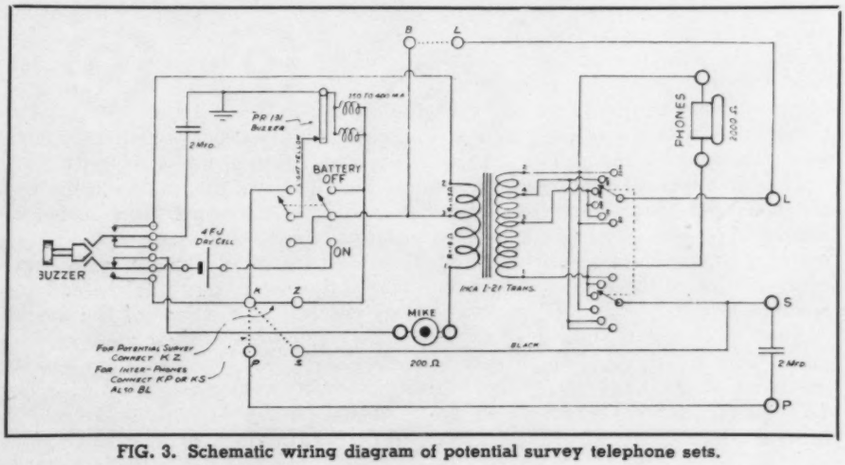


FIG. 3. Schematic wiring diagram of potential survey telephone sets.

The telephone sets are used in communicating between the ends of the test wire used in measuring potential drops along a pipe line. These sets are constructed from standard radio parts and contain a tapped impedance-matching transformer which enables them to operate efficiently in either high or low resistance circuits. Fig. 3 shows the internal electrical wiring. The telephone sets save considerable time in making tests between points 2000 ft. or 3000 ft. apart. Normally, the set at the instrument end of the test wire is connected to the line through a blocking condenser which keeps the direct current potential from being grounded through the telephone instrument. The telephone set at the remote end of the wire is connected in series with the wire and the test point; therefore, the blocking condenser is not used. The hand sets require only 20 milliamperes at 1.5 volts for operation. This is supplied by a single 4-FJ dry cell. The buzzer, originally designed for operation on three volts, was modified by connecting both magnet coils in parallel instead of series so that it would operate properly on 1.5 volts. When used for potential survey work, the buzzer signal is heard only through the telephone receiver, since the resistance of the line wire circuit is too great to permit operating the buzzers at the opposite ends of the line directly.

In addition to being used for cathodic protection tests, the telephone sets are used to talk over remote control signal circuits when making adjustments to the instruments, or calibrating the gages. When used this way as interphones where the line resistance is low, the links on the internal connecting block in the telephone sets (see Fig. 3) are changed so that pressing the push button at one station will sound the buzzer at the other. This apparatus is also shown in Fig. 2.

The Elimination of

EXHAUST GASES FROM TRUCK BODIES

By T. P. JENKINS

Pacific Gas & Electric Company

Although exhaust pipes for truck engines have, undoubtedly, been designed that discharge the exhaust gas away from the cab seat, less consideration, apparently, has been given to exhaust fumes entering the body of the vehicle. For this reason, passengers are often exposed to exhaust fumes issuing from the discharge vent. The following paper on "Elimination of Exhaust Gases from Truck Bodies," by T. P. Jenkins, Pacific Gas & Electric Co., Stockton, Calif., was presented at the 47th Annual Convention of the Pacific Coast Gas Association in Coronado, Calif., September 18-20. Graduating from the University of California in Berkeley in 1923 with a Bachelor of Science degree in Mechanical Engineering, his first connection was with the Union Oil Co. of California, in their Research and Development Department at Signal Hill. His next position was with the Pacific Gas & Electric Co., where he started as a mapper in the North Bay Division at San Rafael. In 1925, he was transferred to Santa Rosa as district foreman, and in the fall of that year to Stockton where he now holds the position of superintendent of gas distribution.

T. P. JENKINS

MANY of the larger trucks used by utilities are designed primarily for the transportation of material and equipment. The transportation of crew members has been given secondary consideration both as to comfort and safety. One of the hazards to which they have been unwittingly exposed has been carbon monoxide from the truck exhaust.

These trucks are usually of the "van" type, either with canvas sides and tops or the newer type using all metal bodies. There is sufficient leakage of fresh air through the seams of most of the canvas topped trucks to keep the enclosed air fairly free of contamination. This is not the case, however, with the all-metal bodies, so the ventilation of these bodies and the proper location of the truck exhaust pipe is of greater importance.

Every gasoline engine is a potential producer of carbon monoxide, regardless of how carefully the carburetor has been adjusted. The air through which the truck is passing can be and is contaminated with exhaust gases, either from leaks in the exhaust system or from the end of the exhaust pipe. Various defects are continually being found, such as loose or blown gaskets, cracked manifolds, corroded flexible tubing, leaking mufflers and the like.

Thus employes riding in trucks of the type considered in this study are subjected to noxious fumes and so complain of headaches and dizziness. As a result operators have endeavored to find the proper location of an exhaust pipe so that fumes therefrom will not enter the space occupied by passengers.

This paper covers a study made of this problem, using a model truck designed like its larger prototype. The tests were made using a type of wind tunnel, the central one-third of which had glass sides. A smoke box with a damper was located at one end and a three-speed exhaust fan at the other. Straightening vanes were installed at the front of the model in order to overcome the tendency for the warm smoke to rise.

Pictures of the various tests were taken. These were augmented by sketches and observations. From these photographs and other data, the sketches illustrating the results were drawn.

The study was divided into two parts. The first covers the paths taken by the various air streams passing around the model. To do this, smoke was passed around the model and then allowed to clear up.

The second part was run to determine the best location for the exhaust pipe. Clear air was passed around the truck and smoke was forced through a copper pipe placed at various locations on the model.

Air Flow

Figs. 1, 2 and 3 are in sequence and clearly show the progress of the smoke above and below the model. The ground air traveling slower, due to obstructions under the truck, curled up over the end of the truck and into the body along the deck. The faster air sliding along the top side of the body, caused a draft along the inside of the top from front to rear. This pulled in the eddying ground air along the floor, filling the entire space.

Thus it appeared that most of the air entering the body came from under the model; hence any gases exhausted under a truck would result in a high concentration of these gases within the truck body.

Figs. 4, 5 and 6 show results obtained with an adjustable louvre set in the front of the body above the cab. The best results were obtained with the louvres sloping downward at about 30° from the horizontal. The air thus admitted filled the whole truck and blocked the entrance of air from the rear.

However, in cool weather this blast of air would be objectionable. As a matter of fact, louvres have been tried on trucks and usually the men close them or stuff them full of rags, preferring the noxious fumes to the cold draft. Therefore, unless the air that enters through the louvres is heated, the use of louvres is not practical throughout the year.

Fig. 7 shows an air scoop mounted in the top of the body near the rear. This scoop had a return bend in it so as to reverse the flow of air in the body. It seemed very effective in providing fresh air as well as blocking off the "ground air."

This part of the experiment showed that means should be provided for admitting fresh air into the body of the truck to counteract the foul air which is sucked in through the opening at the rear.

Fig. 8 shows the exhaust pipe terminating at the upper rear corner of the truck, and exhausting upward. The gases had no tendency to enter the compartment, even at low air speeds.

Fig. 9 shows the exhaust pipe terminating at the upper front corner of the body behind the cab, and exhausting vertically. The exhaust gases were swept downward and into the eddying air currents at the rear of the model. As a result some of these gases entered the body.

Fig. 10 shows the exhaust pipe terminating under the body at the rear of the truck. In this case the exhaust gases

mixed with the eddying air at the rear of the truck and followed the ground air into the compartment.

Figs. 11 and 12 show an elevation and plan of the model with the exhaust pipe fastened to the front bumper and pointing to the side. The gases followed along the side of the truck, some being whipped into the body after mixing with the eddying air at the rear.

In a cross wind, these gases would either clear the end of the truck, or carry around into it, depending on the direction of the wind in relation to the position of the exhaust pipe.

Conclusions

As a result of these investigations, the following conclusions have been reached:

1. Unless means are provided to admit fresh air into an open-ended truck body in order to relieve the reduced air pressure existing therein, air will enter from the rear, principally from the ground.

2. Ventilating louvres at the front of the body are not satisfactory, because of objectionable strong drafts, although fresh air is maintained.

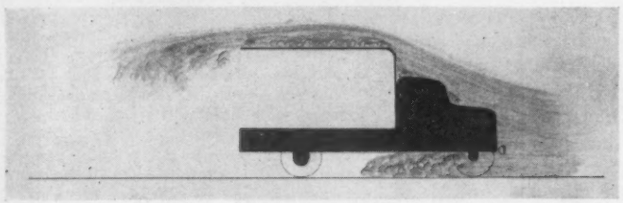
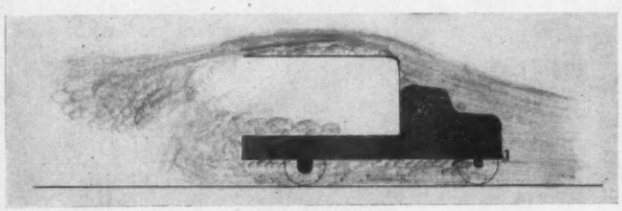


FIG. 1.



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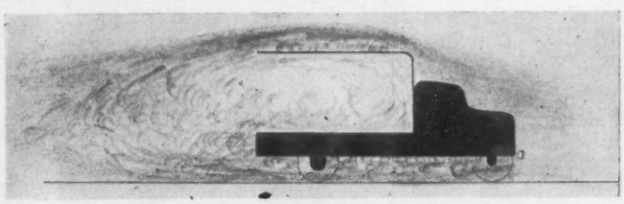
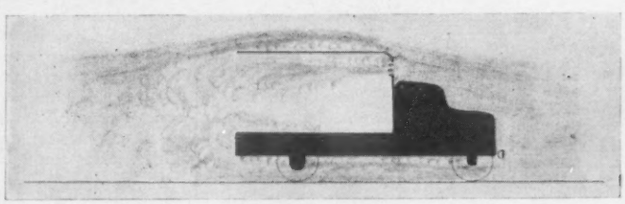


FIG. 3.



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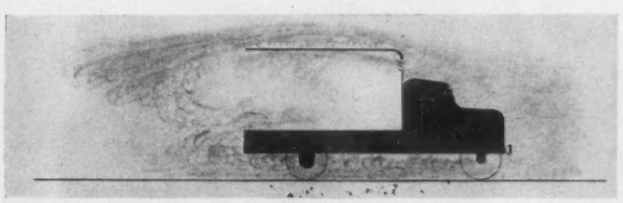

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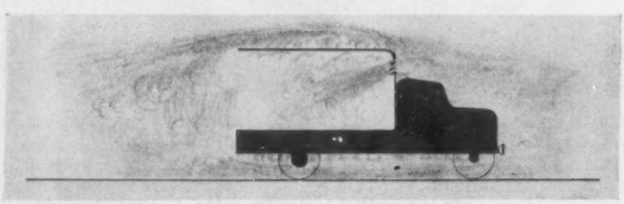

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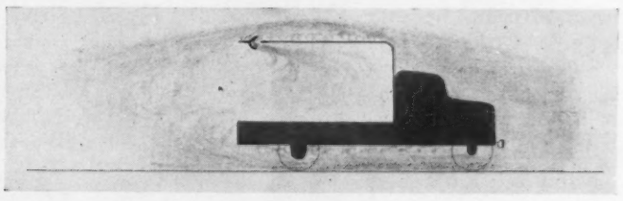
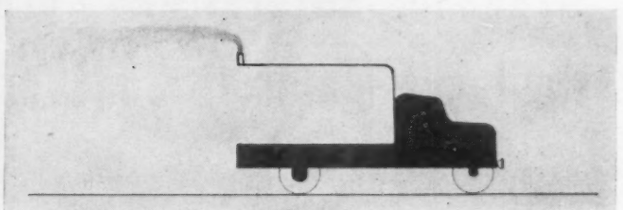


FIG. 7.



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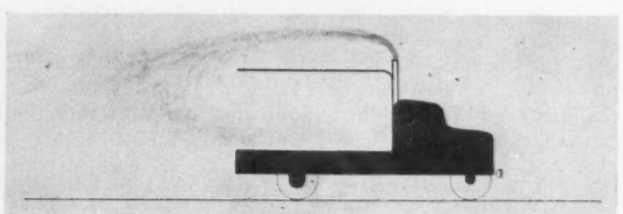

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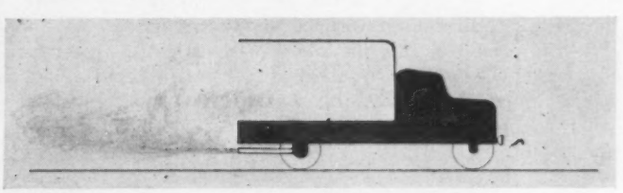


FIG. 10.

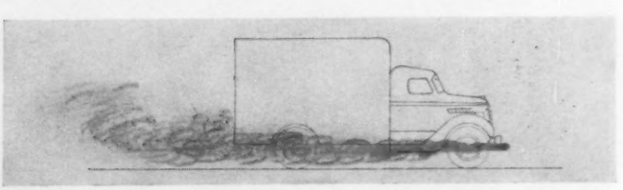


FIG. 11.

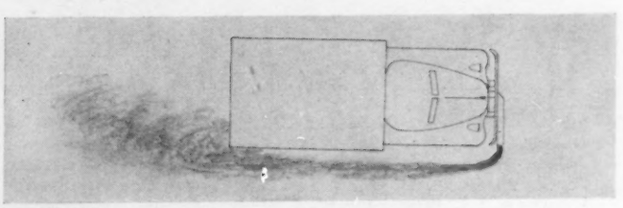


FIG. 12.

3. A "scoop" in the top at the rear of the truck, that reverses the flow of air within the body gave good results. However, such a device can only be used on metal topped trucks.

4. Exhaust pipes should terminate at a rear corner of the truck and above the top so that the gases are directed upward and do not get a chance to mix with the eddying air currents close to the rear of the truck.

5. Any other location of an exhaust pipe results in exhaust gases contaminating the air in the compartment.

Regardless of the location of an exhaust pipe, every portion of it between the engine and the tail pipe should be of first class material and free of leaks. Any leaks along its length will contaminate the air through which a truck passes and under normal circumstances will enter the truck body.

These conclusions are borne out by similar tests conducted by classes at the Stockton Junior College located at the College of the Pacific. Instead of using smoke, they used ammonia gas escaping through a tube simulating an exhaust pipe.

Papers soaked in phenol-phthalein were hung on wires within the model and times recorded to show when the ammonia had contacted the test papers. These tests, as mentioned before, show results parallel to those obtained by the writer.

W. M. Little, general superintendent gas distribution of the Arkansas-Louisiana Gas Co., with headquarters in Shreveport, La.; Carroll Diller, assistant superintendent in charge of budgets, construction and maintenance; F. D. Krumpeln, chief clerk of customer accounting, looking over construction budget.

Arkansas Natural Gas Corporation Replaces Mains in Southern Cities

THE Arkansas Natural Gas Corp., Shreveport, La., recently started a $22,500 replacement work program in Shreveport, La., Texarkana, Little Rock, and Pine Bluff, Ark.

Work in two of the cities, Shreveport and Texarkana, has been completed. In Shreveport, the first job was replacing 2300 ft. of 10-in. welded line in the business section with 10-in. cast iron pipe having rubber compression joints, at a cost of $8500. It is bonded across each joint with a copper cable so that galvanic currents, which destroyed the old line, will not be discharged. The pipe used was tested for 150 lbs. pressure, but the main will carry only 35 lbs. pressure.

The other Shreveport job was the construction of a 10-in. low-pressure line to supply the new 17-story Commercial Bank Building at a cost of approximately $2000. The peak hourly demand of this building will be about 19,000 cu. ft. and will be supplied through an 8-in. service from the new 10-in. line. In addition to supplying the bank building with gas, the new line will serve as a future low pressure feeder for the entire commercial area in the downtown section of Shreveport.

The construction now under way in Texarkana consists of the laying of a 5000-ft., 10-in. welded pipe costing about $12,000. This line is the main source of supply for the city and replaces an old one in service since 1907. During this time, several large industrial consumers and more than 7000 domestic customers have been added.

At Little Rock, 1300 ft. of 12-in. pipe is being replaced with pipe of the same size, with an additional tie-in being made at the east end of the city involving approximately 1 mile of 8-in. pipe.

At Pine Bluff, 1000 ft. of 12-in. steel pipe is being replaced with the same size steel pipe. This line is from the town border station to the first district regulator station. Five hundred ft. of 10-in. pipe is also being replaced with 12-in. between the company regulator station at the warehouse lot and the Arkansas Power & Light Co. plant.

■ ■

Memphis Natural Gas Co. Constructing Loop Lines

The Memphis Natural Gas Co., Memphis, Tenn., is constructing 92.2 miles of 18-in. OD pipe to provide additional capacity to the present pipe line system from the Guthrie gas field in Louisiana to Memphis, Tenn.

Construction of the loop lines consist of 17.4 miles from Galion, La., to a point north of Wilmot compressing station in Arkansas; 24 miles from the Mississippi River to the Benoit, Tenn., compressing station; 40.6 miles from Marigold, Tenn., to the compressing station at Lula, Tenn.; and 10.2 miles south of Memphis. Forty miles have been completed.

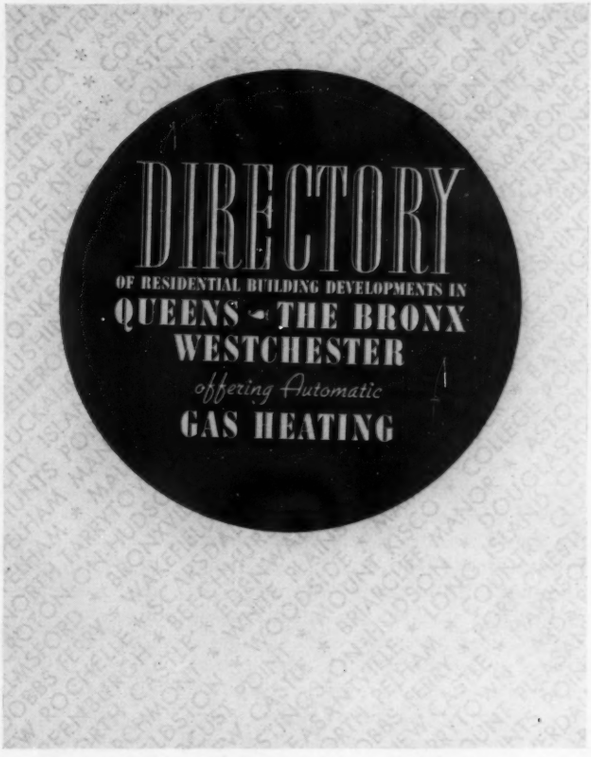
Forty-two charter members of the Triangle Club of the Panhandle Eastern Pipe Line Company gather for their first dinner at the Kansas Club in Kansas City. Eligible to the newly formed organization are members of the company having 10 years of continuous service. Among those present: J. D. Creveling, company president and host; Richard C. Patterson, director; and G. J. Neuner, vice president. Among the 10-year men: J. C. Reinbold, general superintendent; S. A. Taylor, purchasing agent; P. H. Miller, oldest employe of company; J. J. Tipton, J. C. Wright and W. K. Sanders, division superintendents. A gold triangle pin is awarded to the members. Present officers of the club are: J. C. Wright, chief; Ben Martz, patriarch; Pat H. Miller, Historian.

The Architect

The Part He Plays In Building Your Gas House Heating Load

By JAMES E. COOK

Manager, Architects and Builders Division
Westchester Lighting Company, Mount Vernon, N. Y.



AT RIGHT:
The front cover of the directory compiled by the Westchester Lighting Co. to aid in the cooperation of the gas company, architect and home builder.

SINCE 67 cents of every dollar spent in residential construction is influenced in some way or another by an architect, it seems only logical to assume that the degree of understanding and cooperation that exists between the architect and representatives of the gas company in the territory would be reflected in the figures having to do with the number of gas installations in comparison with those of competing fuels. Of course, it goes without saying that the difference in price of various fuels in different localities is a strong factor, but I know of no territory where the gas heating rate is so high as to be prohibitive for use in every type of residence. But is is unquestionably true that the higher the rate, the more intensive and intelligent is the effort required to capture a fair share of the new home heating load.

J. E. COOK

The Westchester Lighting Co. undertook a campaign of architectural promotion in 1935. Our figures now show that prior to the inauguration of this promotion less than 10% of our house heating installations were made in new homes; whereas the figures for 1939 show that 47% of the gas house heating sales were in this classification. It is of further interest to note that for the first six months of 1940, new house sales accounted for 57% of total house heating sales.

These figures are more impressive when we consider the fact that during the last five years Westchester County has been in the throes of a period of declining building activity. At the present time 40% of all new homes being built on our lines are using gas for heat. It is the writer's conviction, which has been stated at numerous times before gas associations, that any gas territory that has a potential of 50 new architecturally designed homes per year is justified in employing a special heating man for the sole purpose of making regular calls on the architects.

To be able to sell the architect, it is necessary to know something about his problems and to approach him from a sympathetic and cooperative standpoint. For this reason, an architect's contact man who has had architectural training is likely to be more immediately successful in winning the confidence of the profession than would a straight heating man who may at various times be overanxious to sell a specific job without regard for the ethics and attitude of the architectural profession.

Ball Playing Necessary

To embark on a program of architectural cooperation, it is necessary at the outset to adopt the fundamental principle that the gas company is going to play ball with the architect 100%. Perhaps the first step by which a salesman specializing in this type of contact can give evidence of his company's good intentions is by advising prospective home builders, whenever the opportunity presents itself, of the advisability and desirability of competent architectural service. It is not necessary to strain the truth in the slightest in making such recommendations, for the complete supervision of the construction of the home which the architect gives, and, for which his fee rarely exceeds 6% of the total cost of that home is almost always repaid to the owner in terms of better quality and a guarantee against hidden defects in construction, and material substitutions. In other words, the architect is very cheap insurance against jerry building.

Other promotional activities that can be carried on merely come under the heading of good public relations and readily suggest themselves to any sales or department manager who is convinced of the advisability of closely cooperating with the architects.

A block schematic for the promotion of gas house heating activities as followed by the Westchester Lighting Co. during the past five years as shown in Fig. 1. In our own particular organization the personnel of this division consists of the writer as manager, and three salesmen. The activity of the four men in this department consists of maintaining a close contact with the 90 architects in Westchester County and with the owners of architecturally designed residences. It should be added, however, that calls are not made

on a client without first securing the permission of the architect. Even when an inquiry comes direct from an owner, the reply is sent to him through his architect and an additional copy of the letter of reply is enclosed so that the architect may retain this copy for his own files.

We subscribe to the Dodge Reports which give information, not only on jobs in progress, but on jobs that are only contemplated and on which the architectural work has gone no further than preliminary sketches. After permission is secured from the architect or owner, a heat-loss survey is made from the plans and an operating cost estimate is given, in duplicate, to the architect. When indefinite or future building reports are secured or where no architect has been selected, we mail the owner a return post card which has proven most effective. The department does not sell merchandise to new jobs, and where engineering specifications are required, they are referred to and drawn up by the manufacturer of any make of equipment for which the buyer or architect has indicated a preference. We are therefore looked upon, and used in a consulting capacity, and in this way the architect and owner is assured that we have no fish to fry insofar as merchandising heating equipment is concerned.

Other Activities

Subsidiary, but nevertheless valuable, relations with this profession include trips, picnics, and other forms of entertainment. For example, an architectural pilgrimage to historic spots throughout New York, New Jersey and New England is one annual activity that has been received with great favor. Our procedure in this has been to enlist the cooperation of some other utility in a town that has some historic buildings that are of interest to designers from the standpoint of their fidelity to type. We arrange the pilgrimage, which is mostly by motor caravan, and the cooperating gas company in the town that is the object of our visit invites its local architects to be guests in a fraternal entertainment of the visiting members of their profession. At least half the membership of the local architectural societies participate in these pilgrimages.

Our building auditorium is always available for the display of renderings and photographs, as well as for any public or private meetings of the local architectural society and the A. I. A. chapter.

In the early spring of this year, our companies in the Consolidated Edison system issued a complete directory of residential building developments in our territory, fully illustrated with typical homes offered for sale, giving their location, the size of each house, the price, and the name of both builder and architect. This has been very well received by both architects and builders because it is an effective buyer's handbook of gas heated homes for sale throughout our entire territory. The value of this service as maintained by this company would seem to have amply justified its existence. As has been pointed out, it has resulted in a substantial increase in the house heating load and there are other factors that belong definitely on the credit side of the ledger in estimating the department's value. We must remember that in every new house where an oil burner is installed, the owner of that house ceases to be a prospect for gas heat for at least seven years, and that every gas heating sale freezes the water heating, cooking and possible refrigeration load.

A few don'ts might serve to summarize the mistakes that must not be made in this type of contact and also to point out the procedure which experience has shown it is wise to follow:

Don't antagonize the architect by going over his head to the owner. Remember that he has been retained because of his ability to analyze and make recommendations on every phase of the owner's home building problem.

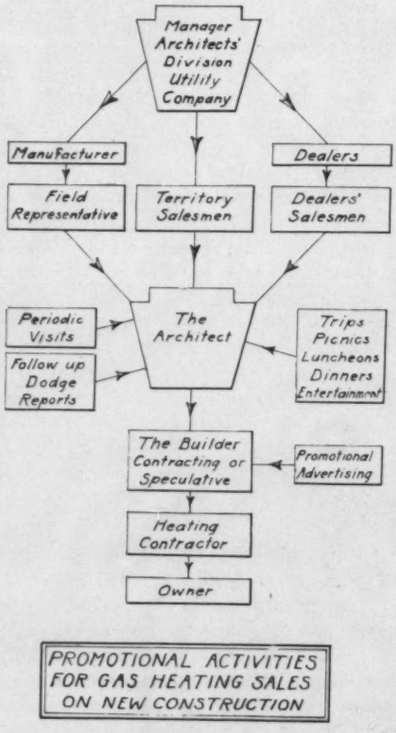


FIG. 1. Promotional activities for gas heating sales on new construction.

Even if you are successful in having a client change his specifications, the architect as his professional consultant gets in the last word and if he is irritated by your method of approach you can be sure the word will not be favorable.

Don't try high pressure selling methods. The average architect wants facts that will enable him to best decide in the interest of his clients and then back that judgment up in the event he is subjected to a pointed interrogation by the owner.

Don't fade out of the picture during periods when building activity is a little slack. If you have anything that is worthwhile for the architect to hear he is more likely to be able to listen to your story when he isn't rushed to death.

Don't refuse to figure a job for gas even though you know that oil will be used. The architect will appreciate your willingness to cooperate, particularly when there is not the incentive of an immediate specification being written in your favor; and you will also have introduced into his files another guide for future reference when comparison between gas and a competing fuel is under consideration. It's up to the gas company and to the architect's division of that company to see to it that every practicing architect in his territory is not only aware of the advantages of gas as a house heating medium, but also has the confident feeling that on any operation involving heating he can secure prompt and reliable information from his public utility.

■ ■

Philadelphia Co. Offers Courses To Employes

The University of Pittsburgh is cooperating again this year with the employment and training division of the personnel department, Philadelphia Co., Pittsburgh, Pa., by offering additional new courses designed especially to fit the needs of the employes. These courses are known desires of various groups of employes who have openly expressed their wishes.

Some of the evening courses being offered are: Utility Accounting, consisting of 20 lectures by T. C. McDermott; Natural Gas II (production), a continuation of the course held in Clarksburg, W. Va., last year; Natural Gas III (transportation), which will cover the final year's work of the Mineral Industries department of the Pennsylvania State College; Utility Management and Economic Problems, covers financial and operating problems.

■ ■

Gas Company Moves Office

The Missouri Natural Gas Co., Farmington, Mo., will move its office to a new building now under construction in Festus, Mo., according to Herbert Boyd, Festus local manager. The construction is being done by the Donald Construction Co.

Fourteen Years of Home Service

By RUTH SOULE

The Brooklyn Union Gas Company

SCANNING a home service program of 14 years ago is as strange as looking at a hat of that by-gone day, for public taste and public acceptance have changed amazingly in those years. And still, the pendulum has swung from cooking demonstrations through many activities, back to cooking demonstrations, (that is, as a back-bone activity) but cooking demonstrations with a great difference. The era of straight educational cookery and nutrition instruction, with the appliance more or less subordinated, has gone, and now we present our story through our appliance, with everything planned to show ease and efficiency and certainty of performance, and with cooking technique and meal planning given secondary importance.

RUTH SOULE

I have heard many criticisms of "cooking demonstrations," and I think the critics are speaking of that early type. I should like to make a plea for those early demonstrations: I think they served their purpose, for at the time they were given the public was dreadfully afraid of being subjected to high-pressure salesmanship, and in order to reassure our audiences, we were obliged to completely divorce our activities from sales activities. Fourteen years ago we had a range with oven heat control and more or less white enamel. There was no refrigerator; home heating was a strictly sectional load, and water heating had not begun to come into its own in many territories. Lest I be misunderstood, I think I had better go on record right now as saying that statements are confined to my own experience, within our own territory.

When we organized our present division in 1925, we chose to begin in a small way, and grow as we went along. I am very glad we did, for we undertook activities as the demand for them arose. The trial and error method through which our present program was evolved never caused material difficulty, and we have always been able to keep our program flexible enough to meet current conditions within and without our organization. For the first year or two we gave demonstrations at our one auditorium and at rented halls in communities in the Borough of Queens; we demonstrated at food shows; we made a few home calls. About 10 years ago we found that women were beginning to show interest in equipment as such, and we gave them the story in as large doses as we felt could be administered. Now, of course, as everybody knows, women will come in capacity numbers for an out-and-out equipment demonstration — but that is because of the confidence they have come to feel in the accuracy of the information they receive, as well as because of the educational work the schools and magazines have done. And perhaps I had better say here that we have always felt it incumbent upon us to give only the most carefully checked information, however sales-slanted our presentation might be.

Back-bone Activities

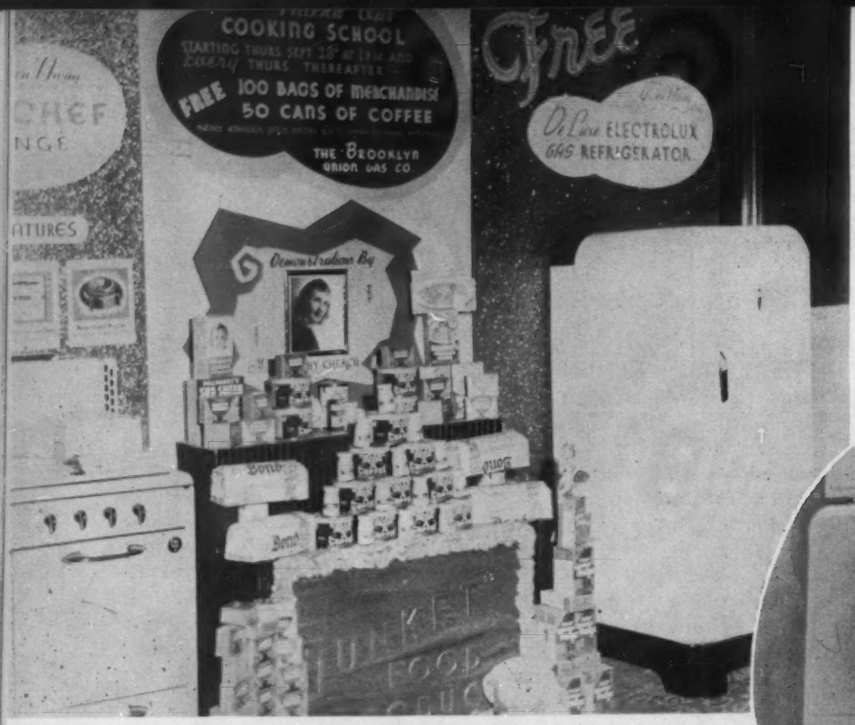
Because of changing needs and tastes on the part of the public, which means changing standards, we aim toward a well-rounded program, with some back-bone activities that carry on year after year, and with others designed to meet popular trends which can be abandoned as each trend begins to wane. Activities in such a territory as ours, where we have few community groups, are necessarily different from those in a close-knit community.

Our back-bone activities are:

1. *Regular Demonstrations*, given once each week for the general public at each of our five auditoriums. The big problem, common to every home service department, is to get turnover at these demonstrations. The women who come week after week, year after year, are excellent publicity and good-will builders, but we all like a good percentage of turnover each week. We have always hesitated to admit women only on cards of invitation, as has been done successfully in many places, lest in our territory we build ill will. We have tried by various means to cope with the situation, but our most successful efforts have been directed toward securing so many new people that eventually the others were pretty much crowded out as regular attendants. We secure lists of preferred names from every possible source and mail to them mimeographed hand-written announcements of the content of the next demonstration, signed by the lecturer in charge of the nearest branch, and inserted in programs (we always have very attractive programs, designed by our display studio). These serve our purpose very well. We send out 800 or 1000 each week. Our repeaters (that is, the old-time repeaters) are very few, and most of our women are young or youngish, and interested in the information we give them. Our window signs, the newsettes, and word of mouth (customers' and employes') all help materially, and of course the general attitude of the public is now one of interest in equipment.

2. *Individual Instruction Classes*, given one or two days each week at each of our five branches. Brides and young business women are eligible for this course, which they may take only once; it consists of six hour-and-a-half lessons on the preparation of basic dishes. The members of the class do the cooking under supervision. While the course is educational, it is very definitely sales-slanted, and everyone who takes it is tremendously enthusiastic over modern gas equipment. The size of each group is limited to six or eight. We can take 100 women at a time, and there is naturally always a waiting list.

3. *Special Demonstrations for Purchasers.* They have been increasingly popular during the five years we have offered them, and I believe they will continue to be successful. About once a month we send a personalized letter to each purchaser of a domestic appliance, inviting her to attend a special demonstration. We tell her we will show her how to use most effectively the appliance she has bought; we will show her what wonderful things the CP range and Electrolux refrigerator will do, and we will answer questions. We enclosed a post-paid return card, with a space for number of guests. Nearly everybody who replies brings at least one guest, and often anywhere from



A lobby display at the Marine Theater in New York, setting for one of Brooklyn Union Gas Co.'s home service cooking demonstrations.

Miss Dorothy Church, Brooklyn Union Gas Co. home service lecturer, conducts a cooking class at the Marine Theater school.

four to 25. All of which makes us sure that most women do not like to go out alone. The letters seem to be taken seriously, for we receive many letters in reply, explaining that the writer is unable to come, and asking if she may come to the next series. Also, many women telephone to say that they did not return the card, but would like to come. In this connection, we tried a little experiment. We had served very light refreshments, but they were rather a nuisance, and added somewhat to the cost of the undertaking, when the crowds were as large as we wanted them. So we discontinued the refreshments, and the attendance fell noticeably. We have been serving again this fall, and the attendance has come back so the percentage return on our letters is the best yet.

4. *Prospect Demonstrations.* We are sufficiently interested in prospect demonstrations so that, in some form, we shall probably continue them indefinitely. Again, the personal letter of invitation is sent out, but after all, a prospect letter is quite obviously a prospect letter. We do our best to make it informal and friendly, and not *too* chatty, and the percentage of return has risen and fallen, depending chiefly, I suppose, upon the value of the lists we were given, and upon weather conditions and the convenience of the day, since after all the people to whom we were writing had no particular urge to visit us. We tried lists from the salesmen, to whom our request was one more job to do, but who did it nobly; we tried lists from our employe leads; and now we have the answer, for the time being at least: the dealers. The idea caught the fancy of the sales force and of the dealers; their lists are excellent, and salesmen and dealers follow through by telephone, and that seems to be the answer. For eight of these demonstrations, given during the busy holiday season — middle November to the middle of December — 8000 invitations were sent out and 1362 women came — a return of 17%, which in a metropolitan area is exceptional, and the sales managers are keeping a record of sales and asking for more demonstrations. All of which boils down to the fact that cooperation is absolutely essential to the success of any of our activities.

5. *Testing.* Testing is an important part of our work, and requires a proportionately great amount of time. Every recipe printed on our sheets is carefully tested, to make sure that results will be uniformly satisfactory.

Also, we test every range model, both retail and wholesale, before it is accepted for sale. Our performance tests, made on rated input and with carefully calibrated ovens, are concerned chiefly with oven, broiler and top stove cooking. We also watch for features women will and will not like; we try to get a cross-section of opinion by a show of hands at demonstrations, from women at our individual instruction classes, and from our home calls. Unsatisfactory performance means that the range will not be merchandised. Our findings are combined with those of our Shop, which are based on construction and ease of servicing. We have found that this activity is of great value in preventing customer dissatisfaction, and in giving our girls and our selling staff a deep-seated confidence in our appliances.

6. *Cooperation with other employe groups.* The type of cooperation varies from time to time, but is always an important part of our work. We aid our sales staff and our dealers in any way we can — by giving them three-lesson courses in which they cook under supervision; by helping them in sales promotion programs; by helping them help a woman make up her mind which range to buy, or whether to buy at all. We supply material for educational work in our Shop School, and learn a good deal by keeping appliances sold in the process.

7. *Publicity and Advertising.* For eight years I have supplied food and equipment articles (mostly food) each week to local community papers within our territory. All of them do not run it every week, but most of them print it pretty regularly. Sometimes it appears in Norwegian, and I had a special series for a Jewish paper printed in Hebrew.

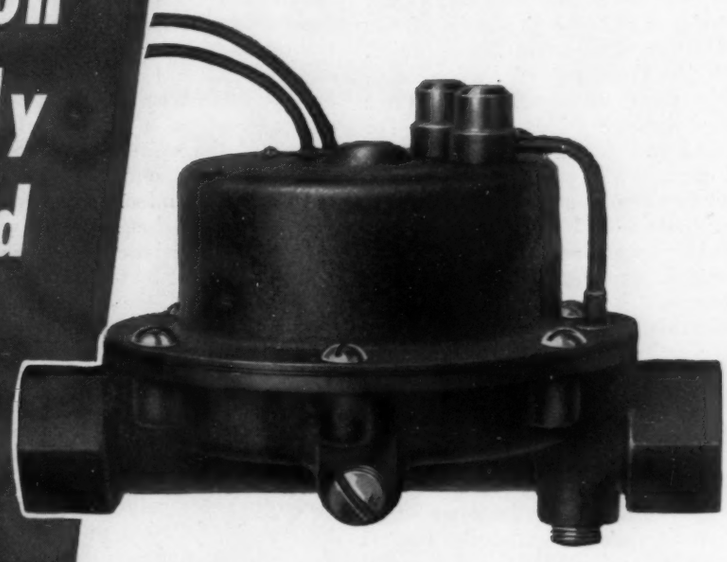
We nearly always have a section in our Newsette, which goes to all our customers each month.

8. *Special Demonstrations for College Students.* We do not have occasion to give very many of these, but always accept such invitations.

9. *Home Calls* are so generally accepted as an essential activity of home

New Improved Performance and New Lower Prices...

for Klixon Thermally Operated Main Gas Valves



KLIXON thermally operated electric diaphragm type main gas control valves have always been popular because they have no solenoids or solenoid troubles. They don't hum or stick. Nor do they chatter during momentary power interruptions. And now comes more improvements that will make these disc-operated valves even more in demand.

With the new Klixon Gas Valves "puff bleed" is standard—"constant bleed" is available *at no extra cost*. Wattage is reduced from 7 to 5 watts. Simplified, improved, provision for manual opening with automatic recycling upon power resumption can be had at slight extra cost. *And prices have been cut substantially.*

These valves are available in sizes from ⅜" through 1¼" I. P. S. with 1000 cu. ft. capacity. They may be bought separately or in complete packaged sets including valve, room thermostat and low voltage transformer. Write for complete information.

KLIXON
TRADE MARK REG. U.S. PAT. OFF.

NEW CATALOG READY...

Be sure to get your copy. Brings you up-to-date on all new developments on Klixon snap-acting controls for gas heating appliances.

SPENCER THERMOSTAT COMPANY • 810 FOREST STREET, ATTLEBORO, MASSACHUSETTS

service that I need not even discuss them, except to say that we have evolved, again after a good deal of experimenting, a combination of service or installation call and survey. We find that in our own situation it is better to have a group of girls who do only home calls. These girls also turn in leads; they receive a fixed sum for every appliance sold.

Temporary Activities

And now we are ready to consider activities of more temporary nature. In the past these have been food shows and the like, which were excellent when we were just beginning and wanted our customers to know of our services; a newspaper home guild, good for three years; card parties, which were successful for three years; demonstrations at night for political and church groups of women and men, which were popular for about two years; classes for Girl and Boy Scouts and Campfire Girls; work in public schools; demonstrations for organized groups meeting in the afternoon, which have always been unpredictable as to attendance, but which still constitute a very minor part of our program, built around the edges as we have time to work them in. Our current big thrill is our theatre cooking school.

At our branch demonstrations we do not aim for crowds; the capacity of our auditorium is purposely limited to about 200, with the idea of maintaining the personal touch. But at theatre cooking schools we are perfectly willing to have a capacity audience. So far we have worked in neighborhood theatres; we give a one-hour demonstration immediately before the movie goes on; the time has been 1:00 P.M. until our current undertaking began, when we had to start at the somewhat inconvenient hour of 10:30 A.M. But to offset the early hour, we are on a very busy shopping street, and we seem to fare just as well as ever.

The theatre management and ourselves share responsibility for the preliminary publicity. This begins two weeks in advance of the opening date. The theatre carries a large announcement on the front page of its newsette and sometimes a second announcement; it also runs a trailer at every performance. The theatre posts a very large sign in its lobby and usually runs newspaper advertising and publicity stories. We are responsible for lobby display and stage set-up, our own lecturer and maid, and all food costs. We also provide throw-arounds (the theatres call them signals, which I think is much prettier), from 40,000 upward depending upon the location, and distribute them broadcast, sometimes enclosing them in bills for the particular district. Also we have a large banner in our neighboring branch, and we make announcements at every meeting we have in the neighborhood. As a result of all these efforts, we have excellent attendance.

One of the problems that troubled us most before we began this project was the necessity for removing our background very quickly, so that the film could go on without delay. This was solved by setting up a background to which our cabinets were attached, done in sections, each mounted on a rolling platform. Appliances (range and refrigerator) were connected by flexible tubing, so that they could be disconnected in a moment. If space permitted, the entire background could be rolled off at once; if not, the sections could be unlocked and rolled off separately. The longest time we ever required, in the latter case, was seven minutes; so that by the time the prizes were distributed, the film could go on without delay. Various food companies contribute 50 or 100 items weekly which are given out, and which we use in the demonstrations and bold-faced in our recipes. For prizes also we give a CP range and an Electrolux refrigerator. In the beginning, our manufacturers generously donated them, but we felt this fall that we should figure out the cost and evaluate the project and either do the whole thing on our own, or abandon it. We are still doing it, and we expect to continue for some time, that is, until we consider that we are no longer getting the results we want.

This leads me to evaluation of any given activity. I so often wish that we could find a dollars-and-cents formula for that sort of thing! In the absence of that, there are three factors I depend upon: actual attendance, turnover (how many different people) and that intangible thing which may be called response of an audience. If women are intensely interested, you can tell it even from the backs of their heads; if they aren't we change our attack; and if there is still no marked interest, we abandon the project. I never like to wait until the success of a project is badly on the wane before discontinuing it. I'd rather drop it while it still seems reasonably successful; there is always something else rising in popularity to take its place.

As for my own program, I think each of the activities is important to the whole because each brings to us women we might not reach through any other channel. To take a few activities in detail:

1. Regular demonstrations: Given on a definite day of each week, year after year, they are a permanent service upon which our customers can depend. While they are strongly sales-slanted, we do not talk gas equipment steadily for a full hour and each day a good deal of cooking information is included. Women who have become interested through a special demonstration usually come back for more information. Women who have stopped to pay a bill drop in. Home call girls, salesmen, cashiers, meter readers, shopmen, collectors and dealers send women in. Neighborhood grocers and butchers are happy to distribute our recipe sheets and programs: they say it helps their sales.

2. Individual instruction classes are invaluable to the girl who knows nothing at all about cooking, who could find no help in recipes or demonstrations or answers to questions. Once she knows how easy modern-day cooking is, she becomes a good customer of *ours*, and a wonderful booster for the company, for gas and gas appliances.

3. Demonstrations for new purchasers have, I think, many advantages. In the first place, we have an opportunity to clear up difficulties while they are still fresh. Women are nearly always enthusiastic about the new purchase, and they very often give wonderful sales talks which are more convincing than ours could ever be, although I must admit that once in a long time their stories are not too helpful, and we are forced to tell them as casually as may be that we will have the difficulty rectified at once. In addition to the good-will angle which is truly important to us, there is always the possibility that a new purchaser will have a latent desire for another new appliance. And anyway, you remember that I told you that these women nearly always bring at least one guest each! And a large number of them have not visited us before.

A Sales Essential

Altogether, during these 14 years, it seems to me that home service has developed from an isolated group, trying without very much real knowledge of sales problems or activities to build good-will between customer and company into an integral part of the selling organization, with a share in its responsibilities and its problems and its accomplishments. I wouldn't know where we will be going in the next 14 years, but I hope we can continue right along the road we are traveling. I like to be part of our sales organization!

LET RELIABLE SPACE HEATING BUILD YOUR LOAD

THE IDEAL FUEL GAS

FLOOR FURNACE
Fully vented—requires no basement — scores of exclusive features.

MODERN CONSOLE
Economical, circulated, vented warmth . . . for the most modest budget.

ZONEAIR UNIT
Heats winter air, circulates summer air, by *zones:* one room, a wing or a whole house.

FORCED AIR UNIT
Slenderized, compact. Fits in closet or nook. Spring-conditioning for small homes.

DUPLEX FURNACE
Sends even heat from both sides of wall. Requires no basement.

GRAVITY FURNACE
Economical, reliable, efficient heating for any size house.

. . . . SELL FAMOUS TWICE--TESTED PAYNE FURNACES

Higher standards of performance and safety in gas-fired space heating equipment are worth the Industry's most exhaustive research. That's why—before and beyond A. G. A. "Blue Star" approval—PAYNE maintains a Proving Ground manned by technicians whose one goal is *perfection.*

The PAYNE Testing Laboratory represents just one of the many advances which PAYNE has pioneered in the last quarter-century.

Recommend, display and sell PAYNEHEAT in your territory.

• ***For information on dealer franchises, write*** **J. H. KEBER,** ***Sales Manager.***

PAYNEHEAT

Payne FURNACE & SUPPLY CO., INC.

BEVERLY HILLS • CALIFORNIA

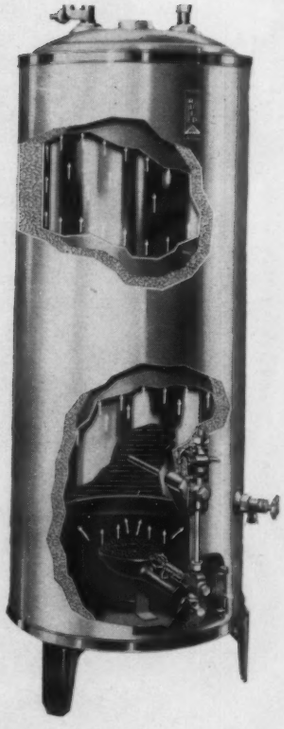
RUUD
Twelve Hundred Series
MONEL
Accepted!

STARTED from scratch in 1938. Now a big seller,—a fine load-builder and load-protector. The RUUD Twelve Hundred series with 20-year guaranteed tanks of solid, rust-proof, age-proof and abuse-proof MONEL, is the "SOMETHING NEW TO TALK ABOUT" that your salesmen have been asking for.

In three short years, RUUD-MONEL has been ACCEPTED as the ideal combination of *top-quality, perfect service and low cost* in an automatic gas water heater by gas companies, plumbers, architects, builders, builder financial agencies, governmental agencies, home builders, home buyers and home owners.

RUUD-MONEL comes to you with complete selling equipment,—magazine advertising, newspaper mats, radio transcriptions, 24-sheet posters, indoor and outdoor displays, sales educational material, sales kits—everything you need to set up a full selling program. Full details on request.

RUUD MANUFACTURING COMPANY
PITTSBURGH, PENNSYLVANIA

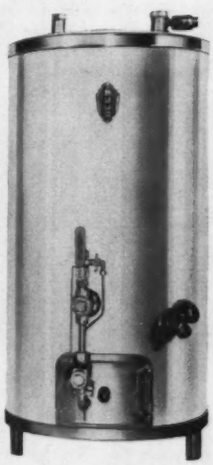


PINE ROOM, HOTEL TRAYMORE
A.G.A. CONVENTION
ATLANTIC CITY, N. J.

Visit the Pine Room for the advance showing of the RUUD advertising and sales promotion program for 1941, including increased national magazine advertising for spring.

SELL RUUD-MONEL . . . IT'S EASY TO SELL

RUUD
Four Hundred Series
MONEL
Coming Fast!



PINE ROOM, HOTEL TRAYMORE
A.G.A. CONVENTION
ATLANTIC CITY, N. J.

See the full selling equipment of RUUD-Monel Automatic Gas Water Heaters in the Pine Room, open throughout the American Gas Association Convention.

THE RUUD Four Hundred series taps a new market, —a market for many years highly resistant to GAS. RUUD meets all the requirements of this market,—*made-to-measure service, reasonable first cost, and low fuel cost,* —with the new Four Hundred series, built with the Ruud chassis and the famous 20-year guaranteed Monel tank.

The market is the modern small family that uses 25, 40 or 60 gallons of hot water a day and these three most numerous requirement brackets are covered by Ruud Nos. 425, 440 and 460. Collateral markets are small commercial and industrial uses.

The end of competitive fuel dominance is in sight, for the Ruud-Monel Four Hundred series is COMING FAST!

Prove your own market by making test installations in the field. Much data is on hand to help you. Write for full details.

RUUD MANUFACTURING COMPANY
PITTSBURGH, PENNSYLVANIA

SELL RUUD-MONEL . . . IT'S EASY TO SELL

New Sales Training Method Records Sales Presentations On Wax

AT the August 5 meeting of the American Gas Association Domestic Gas Range Committee held at the Palmer House, Chicago, Ill., approval was given to a plan for the education of retail range salesmen. This idea, known as the CP Audio-Training Service, was first introduced to the industry in the Fall-Winter CP campaign titled, "The American Homemaker Speaks."

CP Audio-Training is accomplished through the use of voice recording equipment. Each salesman prepares a five-minute sales presentation that he believes incorporates the strongest selling points of CP modern gas cookery. In collaboration with an Association of Gas Appliance and Equipment Manufacturers sales counselor this presentation is recorded, then played back to the salesman as one would play an ordinary phonograph record. The salesman hears his own voice with all of its many inflections. His own approach and sales story of the advantages and benefits of a CP range are presented to him as if he were the customer.

A salesman has the opportunity to decide whether, if he were in the customer's place, he would buy a range on the merits of the presentation made. It is reported that experience in other lines of industry has shown that Audio-Training is welcomed by the salesman. It also offers each man the opportunity of developing a specific sales presentation particularly fitted to the individual's personality — one that meets the local conditions and considers each man's selling experience. The salesman has the opportunity of using his own initiative and of employing those sales principles he has found to be most successful.

A. G. A. and A. G. A. E. M. offer this training to all residential sales personnel of all gas companies in the United States and Canada — field salesmen, floor sales personnel and home service representatives, as well as members of the supervisory staff eligible to enroll for CP gas Audio-Training.

Each gas company is asked to explain to its sales organization that persons enrolling will be entered in a contest based on the preparation of the best sales presentations. After each salesman has completed his or her recording, a meeting of all participants is held, and the recordings played. A vote is then taken to determine the winning sales presentations. After the judging, the experience gained will make excellent subject matter for supervisor cooperation with the sales organization in assisting them to further increase their effectiveness. At the conclusion of the judging those enrolled will have his record given to him with the suggestion that it be kept and played from time to time for the purposes of review and continuing self-improvement.

At the A. G. A. Convention to be held in Atlantic City on October 7 a CP Audio-Training booth will be a feature in the Fountain Room in the main lobby of the Hotel Traymore, according to L. C. Ginn, chairman, CP Sales Management Committee of A.G.A.E.M.

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Annual Mid-West Gas School Scheduled for Ames, Iowa

The twentieth annual Mid-West Gas School and Conference has been announced for November 11, 12, and 13 by the Mid-West Gas Association and the Engineering Extension Service of Iowa State College. The meetings will be held on the Iowa State College campus at Ames, Iowa.

Subjects for the conference will be Distribution, Metering, Utilization, and Production. Problems in connection with these topics will be discussed by experienced and capable men from the gas industry, supplemented by discussions conducted by faculty members.

■ ■

Natural Gas Line Planned To Serve Temple, Okla.

The Southwestern Light & Power Co., of Chickasha, Okla., proposes to expend approximately $20,000 to lay a 12-mile pipe line from Temple, Okla., to its main line at Lawton.

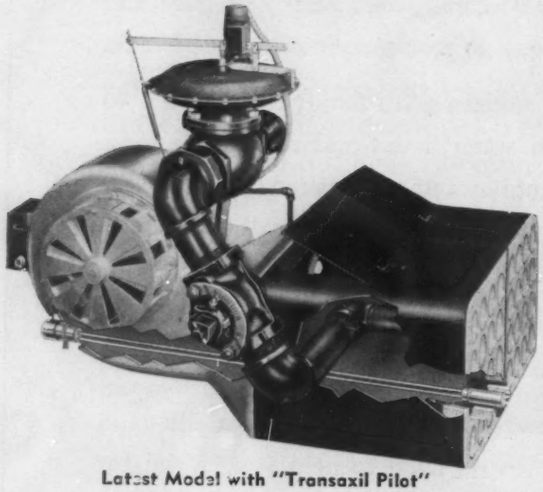
The Lone Star Gas Co., Dallas, Texas, has been supplying the Southwestern company with gas which in turn distributed it to consumers in Temple, but the Lone Star company recently raised its rates from 30 cents to 40 cents per cu. ft. However, a contract has been signed for the Lone Star Co. to provide standby service.

■ ■

Skelly Oil Co. Installs Experimental Laboratory

The Skelly Oil Co. recently announced they are improving a building in Pawhuska, Okla., and will install a laboratory for experimentation on natural gas and gasoline products. Frank Fisher, chemist of the company, announced that at least four men and a girl stenographer will be employed at the plant.

"FAN-AIR" AUTOMATIC UNIT



Latest Model with "Transaxil Pilot"

The Ideal Burner for Difficult Jobs

Enables small plant owners to have advantages and benefits of **Mech'l Draft** operation. With new throttling or magnetic controls plus improved safety pilot, combustion problems are avoided and firebox is used only for burning gas. No more popping of mixers or pulsation, and the stack becomes a negligible item. Produces QUIET FLAMELESS combustion LESS BLAST action.

Worthy of sponsorship for those certain types of tough conversions particularly overloaded scotch marine or other firebox boilers and industrial applications having poorly designed or squeezed furnace volume, short firing depths, low gas pressure and short stacks. Burns any gas and operates readily with NATURAL DRAFT, too.

NOW AVAILABLE IN 10 SIZES FROM 3 TO 400 H.P.

Prompt Deliveries 406 S. MAIN ST. **LEE B. METTLER CO.** Priced Moderately LOS ANGELES, CAL.

Checkmate
...at the very brink

THE SECRET ? CONTROL

When nature steps out, the iron lung steps in—takes over the job of breathing when *human* apparatus fails. Even as you read this, somewhere life that hangs by a slender thread is being maintained, thanks to dependable *control* built into this mechanical miracle.

Less dramatic, but of great significance, is the accurate *control* of heat by the Harper Burner System. By making top-burner cooking easier, and more economical, it is helping both the gas industry and the range manufacturer to convince housewives that *gas* cooking is best.

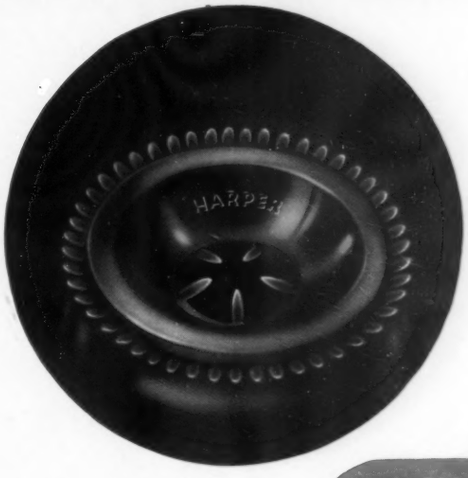
Copr. 1940, Harper-Wyman Co.

CONTROL *is the secret here, too*

● The Harper Burner System is a patented invention whereby each of the burners on the range is actually 2 burners in 1 . . . a burner within a burner . . . both operated and controlled by a single handle.

This arrangement affords a high-speed STARTING BURNER to *start* foods boiling and for fast frying . . . plus a small, central, economical COOKING BURNER for *maintaining* the cooking. The COOKING BURNER can be used entirely independently of the STARTING BURNER. No other top burner possesses this vital advantage — which insures easy, accurate control: just the right heat for every type of top burner cooking . . . every time.

HARPER-WYMAN COMPANY
8562 Vincennes Avenue, Chicago, Ill.



HARPER BURNER SYSTEM

HARPER BURNER SYSTEM

Demonstrates GAS at its best

SEE OTHER SIDE OF THIS PAGE

For sterilizing baby's bottles

. . . the Harper Burner System "does it better"

FACT: No matter for what purpose top burner heat is used, you can be sure that the Harper Burner System will "do it better."

For example, when sterilizing the baby's bottles, or sick-room dishes, both sections of this famous burner help to do it—more easily and economically than is possible with ordinary top burners.

REASON: First, the water is quickly brought to a brisk boil by the large flame of the STARTING BURNER. A turn of the handle then changes the flame instantly to the small COOKING BURNER which maintains the water at the boiling point of 212 degrees.

BENEFITS: There is no wasted heat up the sides of the vessel—the small COOKING BURNER centers it on the *bottom* of the vessel, where it belongs. You boil and sterilize with no wasted gas, no boiling dry, no excess kitchen heat.

The Harper Burner System is adjustable to *lower* heats than are ordinary top burners. This is due to its "2-burners-in-1" construction, a patented principle that has done much to make gas cooking easier, and better than ever before . . . and to sell more women on gas.

The Harper Burner System provides a burner within a burner. The diagram above shows how the COOKING BURNER operates entirely independently of the STARTING BURNER. Yet both are controlled by the same handle.

We shall be glad to send you, without cost, two booklets that tell the complete Harper Burner System story . . . "Modern Methods of Top Burner Cooking" and "The Greatest Cooking Discovery in 40 Years". They should be valuable to anyone interested in the promotion of gas cooking and gas appliances. *Harper-Wyman Company, 8562 Vincennes Avenue, Chicago.*

SEE OTHER SIDE OF THIS PAGE

HARPER BURNER SYSTEM

HARPER BURNER SYSTEM

Gas Utility Revenues Show Gain In First Six Months

DOMESTIC customers served by manufactured and natural gas utilities totaled 16,576,900 on June 30, an increase of 417,900 over the number reported on the same date a year ago, it was announced recently by Paul Ryan, chief statistician of the American Gas Association.

Revenues of manufactured and natural gas utilities aggregated $476,234,300 for the first six months of 1940. This was an increase of 7.8% from the corresponding period of 1939.

Revenues from industrial and commercial users increased 8.8%, while revenues from domestic customers gained 7.4%.

Manufactured gas industry revenues totaled $198,991,400 for the first six months, an increase of 4.9% from a year ago. Revenues from industrial users of manufactured gas increased 10.7%, while commercial revenues gained 4.5%. Revenues from domestic uses, such as cooking, water heating, refrigeration, etc., were 1.2% more than for the corresponding period of 1939.

Revenues of the natural gas industry for the first six months amounted to $277,242,900, a gain of 10.1% from a year ago. Revenues from industrial uses increased 8.7%, while revenues from domestic uses increased 10.3%.

■ ■

Natural Gas Aids in Shipbuilding Program

Natural gas is being used to fire boilers, metal heating furnaces, and ovens for baking cores for castings, by the Union plant of the Bethlehem Steel Co., one of three San Francisco shipbuilding concerns, who are constructing 14 deep-sea merchant ships for the United States Maritime Commission. Gas is also used to heat the Union plant buildings and to supply hot water.

The contracts for these ships total approximately $32,000,000 and is part of a nationwide program by which the Maritime Commission expects to provide the American Merchant Marine with 500 new ships in 10 years. The ships are so constructed that, in case of war, guns can be mounted on their decks.

■ ■

Interstate Gas Co., Inc. Transports Gas Only

The Federal Court at New Orleans, La., recently ended a three-year-old case and held that the Interstate Natural Gas Co., Inc., Monroe, La., was not subject to jurisdiction of the Louisiana Public Service Commission because its product is sold to distributors and moves almost entirely in interstate commerce.

According to newspaper reports, the court found that the company owns and operates a 22-in. pipe line from Fowler, La., which traverses the southwest tip of Mississippi for 43.92 miles along the 171-mile route to Baton Rouge, La., and that the company also sells gas at Monroe, La., to pipe line companies and distributors in Louisiana and Mississippi.

■ ■

Rio Grande Valley Gas Co. Reduces Rates In 17 Cities

The Rio Grande Valley Gas Co., Brownsville, Texas, recently reduced gas rates in 17 cities in Southwest Texas. The reduction will save 9700 customers about $25.000 annually and in addition refund about $2800 to consumers in Harlingen, a report states.

The rate was formerly 98 cents per 1000 cu. ft. with a minimum bill of $1.50. The new rates are $1.50 for the first 1700 cu. ft. with a charge of 70 to 80 cents per 1000 cu. ft. over that, depending on the volume used.

■ ■

Bill Introduced To Protect War Material and Utilities

Senator Sheppard of Texas recently introduced a bill to Congress (S. 4297) which makes the Act of April 20, 1918, providing punishment for willful injury or destruction of war material, or of war premises or utilities used in connection with war material, in time of war applicable also in peace times in the interest of national defense.

The bill specifically includes "water and gas mains and pipes, structures and buildings, whereby or in connection with which water or gas may be furnished to any national defense premises or to the military or naval forces of the United States," and to stations and buildings used to supply heat and other utilities for the purposes above indicated.

■ ■

Southern California Gas Co. Builds Riverside Holder

The Southern California Gas Co., Los Angeles, Calif., recently started construction of a 500,000 cu. ft. "Hortonsphere" gas storage holder at Riverside, Calif. The sphere will be 65 ft. in diameter and is being built by the Chicago Bridge & Iron Co. at a cost of approximately $67,000. It is being erected to stabilize the gas supply due to community growth and increased usage in homes and businesses, according to the company.

Officers Elected For New Synthetic Rubber Company

OFFICERS of the new Hydrocarbon Chemical & Rubber Co., Akron, Ohio, were recently elected at the first meeting of the new firm's board of directors.

Those elected are: R. W. Thomas, head of Phillips Petroleum Co.'s Philgas Department, president; Waldo L. Semon, creator of the new synthetic Ameripol, vice president and director of research; Hy Byrd, assistant secretary of the Phillips company, secretary; H. P. Gangwer, accountant at Goodrich, treasurer; W. F. Avery, assistant secretary of Goodrich, and B. F. Stradley, secretary of the Phillips company, were elected assistant secretaries; Harry N. Stevens, former member of Goodrich's legal staff, patent attorney.

The board also appointed Frank M. Andrews, formerly of Philgas, as sales manager, and W. D. Parrish, raw materials control at Goodrich, as technical service engineer.

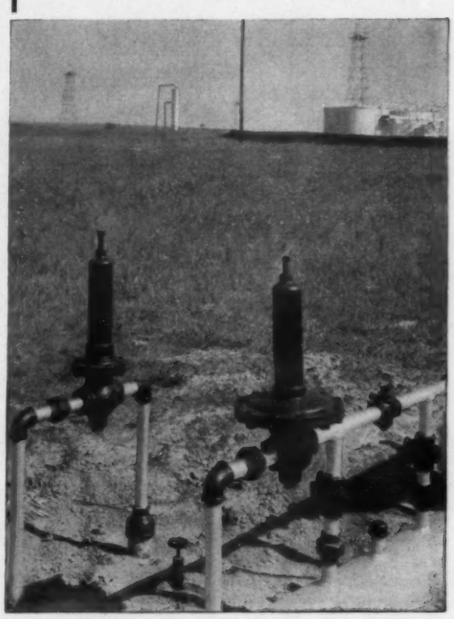
Directors of the Hydrocarbon company are Frank Phillips, chairman of Phillips Petroleum Co.; K. S. Adams, president, and G. G. Oberfell, vice president in charge of research. Representing the Goodrich company are David M. Goodrich, chairman of B. F. Goodrich; John L. Collyer, president, and T. G. Graham, vice president in charge of production.

■ ■

Changeover at Martinsville

R. R. Hassfurder, district manager, Northern Indiana Power Co., announced that Martinsville, Ind., recently received natural gas. Martinsville is one of 14 Indiana cities to be changed over from mixed to straight natural gas by October. (*GAS*, Aug., 1940, page 18.)

Spring Regulators on the



Lines of a Big Gas Company

The C-F Regulators here pictured are on lines of an important producing company in the Texas gas field. One for high pressures, the other for low, they are seen to be of the spring-loaded type which, in some services, is preferred for its compactness and its relative immunity to accident or meddling, as compared with the weight-and-lever type. C-F Regulators are made and approved for all requirements of pressure control.

Write for new Catalog.

The CHAPLIN-FULTON MFG. CO.

28-40 PENN AVE. CF PITTSBURGH, PA.

. . . a HOME DEFENSE program

that is electing many a utility executive on a platform of greater space heating results

Here's a home defense program that will protect your load, guard your revenue and insure your customers' satisfaction.

It will help you win a lot of new "votes" for gas as the *clean, efficient fuel* for space heating. It will put you in strong in certain "precincts" of your community where you haven't been doing as well as you could.

These are the results many utilities are getting right now by inviting consumers to win their war with winter with automatic, comfort-controlled, vented WARD FLOOR FURNACES.

If your plan of winter campaign doesn't include floor furnaces, you are missing heating appliance sales and space heating revenue that should be yours.

What about those people whose homes are not big enough for a unit plant? A good floor furnace will get you in on the ground floor and do a heating job you will be proud of.

How about homes where initial cost is a vital consideration? A floor furnace will get you in and prepare the way for additional installations that will spread the advantage of gas heat to the entire house.

How about those homes without basements . . . or where there are other installation problems? A floor furnace, with practically no installation

problem, is an effective means of putting gas heat into those homes. Just drop the furnace into the floor opening, attach it to vent and gas line, and you've made that home owner a *permanent* "member of your party."

There is opportunity, too, in homes already equipped with major plants, for a floor furnace provides ideal *auxiliary* heat for fall and spring, or *supplementary* heat in special rooms or areas difficult to keep warm.

• • •

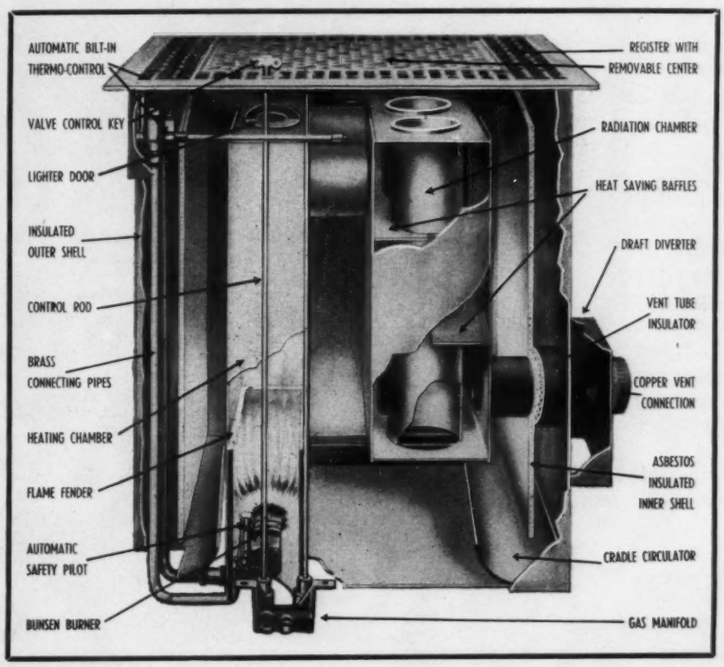
If you haven't been featuring floor furnaces, it would be a good idea to *have a look at the record.* Ten years ago there were *four* of them on the market. In 1940, the A.G.A. Directory lists *ninety* different floor furnaces. That amazing growth is the result of just one fact... *people want floor furnaces.*

Leader in the floor furnace field ten years ago was... and today is... WARD. That is why so many utilities today are conducting space heating campaigns that shout the slogan, "Defend your home against winter cold... with a WARD FLOOR FURNACE."

Drop us a line and we'll be glad to send you our catalog and tell you more about what WARD can do for you.

P. B. Logue

VICE-PRESIDENT AND GENERAL MANAGER



☆ May we send you a copy of our latest catalog with price lists and complete information about our furnaces

WARD HEATER COMPANY
LOS ANGELES

Get in on the Ground Floor with

WARD

Floor Furnaces

A COMPLETELY AUTOMATIC FLOOR FURNACE

You need WARDS... whether you feature them exclusively or already carry some other line. There's a big demand for a floor furnace with *completely built-in automatic features*... like our *Cradle Circulator, Automatic Pilot* and *Bilt-in Thermo-Control* (a built-in thermostat that really works). The WARD FLOOR FURNACE is a complete package ... everything self-contained. After 31 years of furnace building, its popularity has compelled us to devote our entire factory to building floor furnaces.

YOUR LOAD IS AS GOOD AS THE APPLIANCE YOU SELL

FACTORY REPRESENTATIVES

A. S. KINCAID
Southern Manager
P.O. Box 5
Dallas, Texas

J. H. STUBBINS
300 East 68th Terrace
Kansas City, Missouri

H. C. SANDERSON
207 Fulton Bldg.
Pittsburgh, Pennsylvania

L. E. KIRKPATRICK
1700 15th Street
Denver, Colorado

LEON M. TAYLOR
3200 Main Street
Dallas, Texas

SALES Slants

Solid Foundations Build Sales

WORKING on the same idea that a house is only as good as its foundation, the Gas Service Co. of Kansas City, Mo., dug deep for the basis of one of the most successful sales campaigns in recent years. Their preliminary work was based first on the statement by Bruce Barton, nationally known advertising counselor, who stated that 99.9% of all the world's consumer goods were bought either directly or indirectly by women, and second on the results of a survey of 1000 average families which showed that the expenditure for automobiles was $107,500, for tobacco $51,693, for candy $47,200, but only $6,132 for gas ranges in a year.

Combining these two facts, F. M. Rosenkrans, general sales manager, reached the conclusion that gas appliances should be sold on the basis of their appeal to women, and that if such an appeal were established the average American family could afford to spend as much for the fundamental domestic need of gas appliances as it could for luxury items such as candy and tobacco.

With this sound reasoning established, ways and means of turning this basic approach into actual sales were developed. Of assistance in this particular program were the findings of a survey conducted by the American Stove Co. on the question of what features the American woman prefers in a gas range. This questionnaire had been answered by 615 cooking experts among the prominent home economists of America, and a new and different model of Magic Chef was built around these suggestions.

With the chief selling points established by this study of women's preferences, specialty sales campaigns were developed to dramatize both these features and to tie into seasonal trends.

Although the gas range is almost always the star of any gas appliance sales program, the Gas Service Co. also developed special drives on other home equipment, such as water heaters and space heaters, on the same general basis of appealing particularly to women. In March water heaters were featured, in April gas ranges, in May water heaters again, in June a repeat on gas ranges, and in July and August a special drive was organized around off-season discounts on all types of heating appliances. In September a novel campaign was begun to "round up" old gas ranges and replace them with new cooking equipment.

The success of this carefully planned series of campaigns built around the basic idea of "selling Mrs. Smith by seeing through her eyes and talking her language" is proven by the total sales made by the company in approximately 150 towns in Kansas and Missouri. The gross appliance sales and installations for the first six months of 1940 amounted to $1,105,363, a sharp gain over the sales of the first six months of 1939.

F. M. Rosenkrans (right), general sales manager of Gas Service Co., discusses new sales campaigns in his office with C. D. Greason (center), director of publicity and advertising of Gas Service Co., and R. C. Bon Seigneur (left), regional sales manager of Servel, Inc.

■ ■

Everyone's Talking Airplanes

We have just received a letter from F. B. Jones, general sales manager of the Equitable Gas Co., in Pittsburgh, in which he was kind enough to answer our query regarding his recent "Airplane Contest" for both employes and salesmen in connection with a drive for gas circulating heater sales.

The contest ran from February 15 to May 15, and the 10 employes who sent in the most prospects that resulted in sales, and the eight

salesmen who sold the most heaters, were guests of TWA and the gas company on a free airplane ride (see cut). The airplane ride, of course, was an extra inducement offered along with campaign load building payments and salesmen's prizes.

The use of a DC-3 passenger ship was granted Equitable Gas Co. in exchange for publicity in house organs and promotional material. TWA photos were used to illustrate campaign material as well as articles appearing in *Public Service* magazine.

Chief benefits to the company from the flight were, and we quote Mr. Jones: "(1) It gave us the opportunity to 'dramatize' the Airplane Contest with a natural tie-in," and "(2) It enabled us to give the Sales Campaign a note of the unusual to attract salesmen and employes."

Judging from the happy expressions on the faces of the contest winners, we cannot help but feel that Mr. Jones has put forth a noble sales effort.

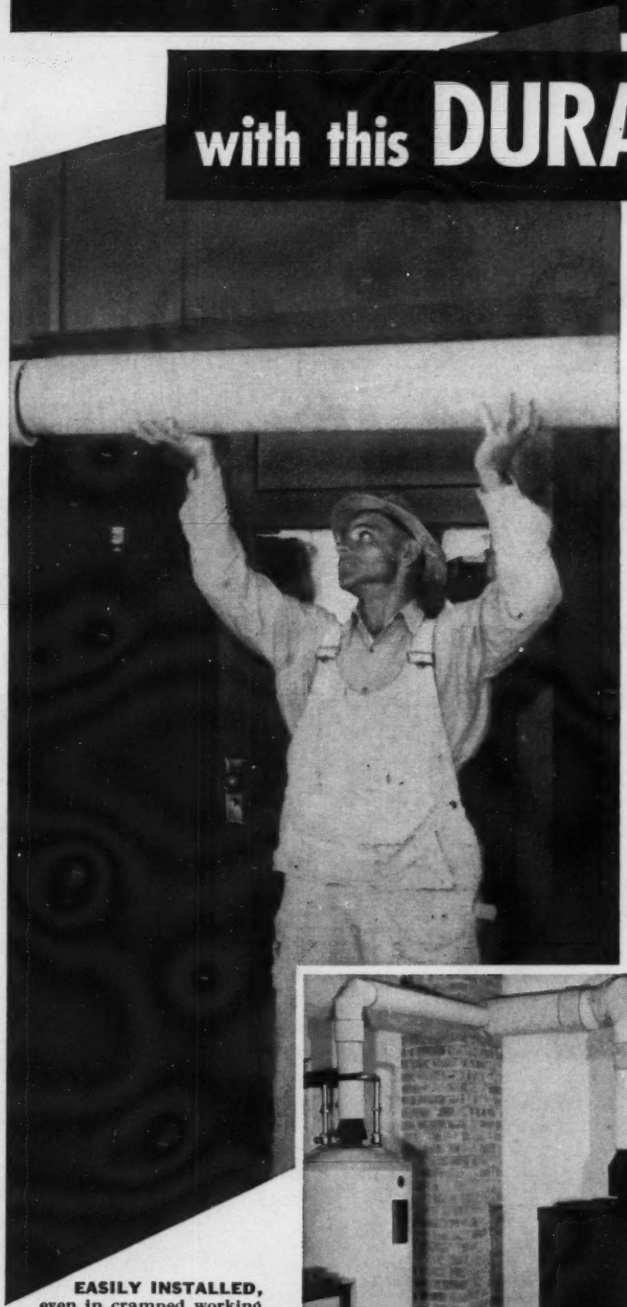
■ ■

Montana-Dakota Utilities Hold Annual Sales Meeting

Twenty states were represented at the ninth annual sales meeting of the Montana-Dakota Utilities Co., Minneapolis, Minn., held at the Alex Johnson Hotel, Rapid City, S. D., August 19-21, according to W. L. Hayes, general sales manager.

Details of the new sales campaign, the "Big Ten" campaign, were given out, and it was announced that the coach of the winning division will be presented with an expense-paid trip to the Rose Bowl game at Pasadena, Calif., January 1, 1941. The Heskett trophy will be given again as in previous years.

CUT DOWN ON "CALL-BACKS" with this DURABLE VENT PIPE



Made of asbestos and cement, unusually strong and durable, J-M Transite Flue Pipe provides maximum assurance of long life, low maintenance . . . helps keep customers sold on gas heating

FREQUENT CALL-BACKS for servicing flue pipe can be annoying to customers . . . may easily cut down your profit margin.

Make sure you install a lasting, dependable venting system by using J-M Transite Flue Pipe. This durable material is made of asbestos and cement . . . fireproof, rotproof, highly resistant to all forms of corrosion . . . helps keep customers sold on the dependability of heating by gas.

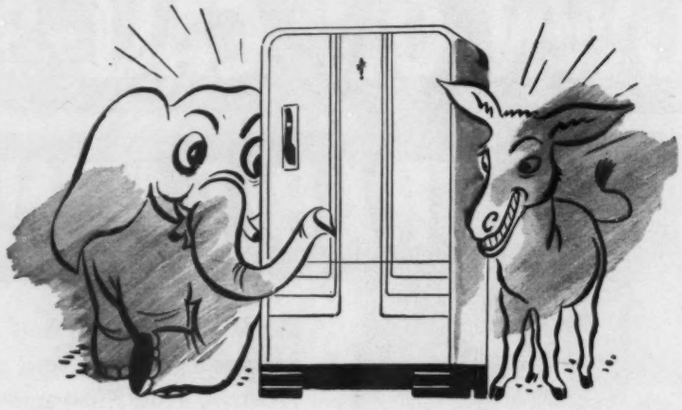
And because Transite is light in weight, easy to handle and comes in a complete range of sizes and fittings, installation is simple, rapid and economical. For details, write for brochure TR-13A. Johns-Manville, 22 East 40th Street, New York, N.Y.

EASILY INSTALLED, even in cramped working quarters, J-M Transite Flue Pipe helps speed up work . . . saves time and money on the job. A complete line of fittings, plus Transite's surprisingly light weight make installation fast, simple and economical.

HIGHLY RESISTANT to corrosive fumes, gases and weather, Transite requires little or no maintenance. Its tough asbestos-cement composition provides maximum assurance of long life.

AFTER TEN YEARS' exposure to weather outside, corrosive fumes inside, this J-M Transite Flue Pipe installation is still in excellent condition . . . requires no maintenance.

Johns-Manville TRANSITE FLUE PIPE



All parties agree on this . . .

GAS REFRIGERATION GETS THE VOTE

Customers vote for its silence and dependability . . . Gas Companies for the way it helps them sell "Gas for all 4 Jobs"

FROM outside sources . . . from polls and surveys conducted by impartial organizations . . . comes proof that there is a definite and increasing trend in favor of Gas Refrigeration.

Every year, more and more people who've had experience with other makes of refrigeration are changing to Servel Electrolux. They've learned that its freezing system with no moving parts is the only one that can assure them of permanent silence, continued low operating cost and the other advantages they want.

And among people buying their first automatics, the experience of those who've tried others is tipping the balance in favor of Servel in more and more cases.

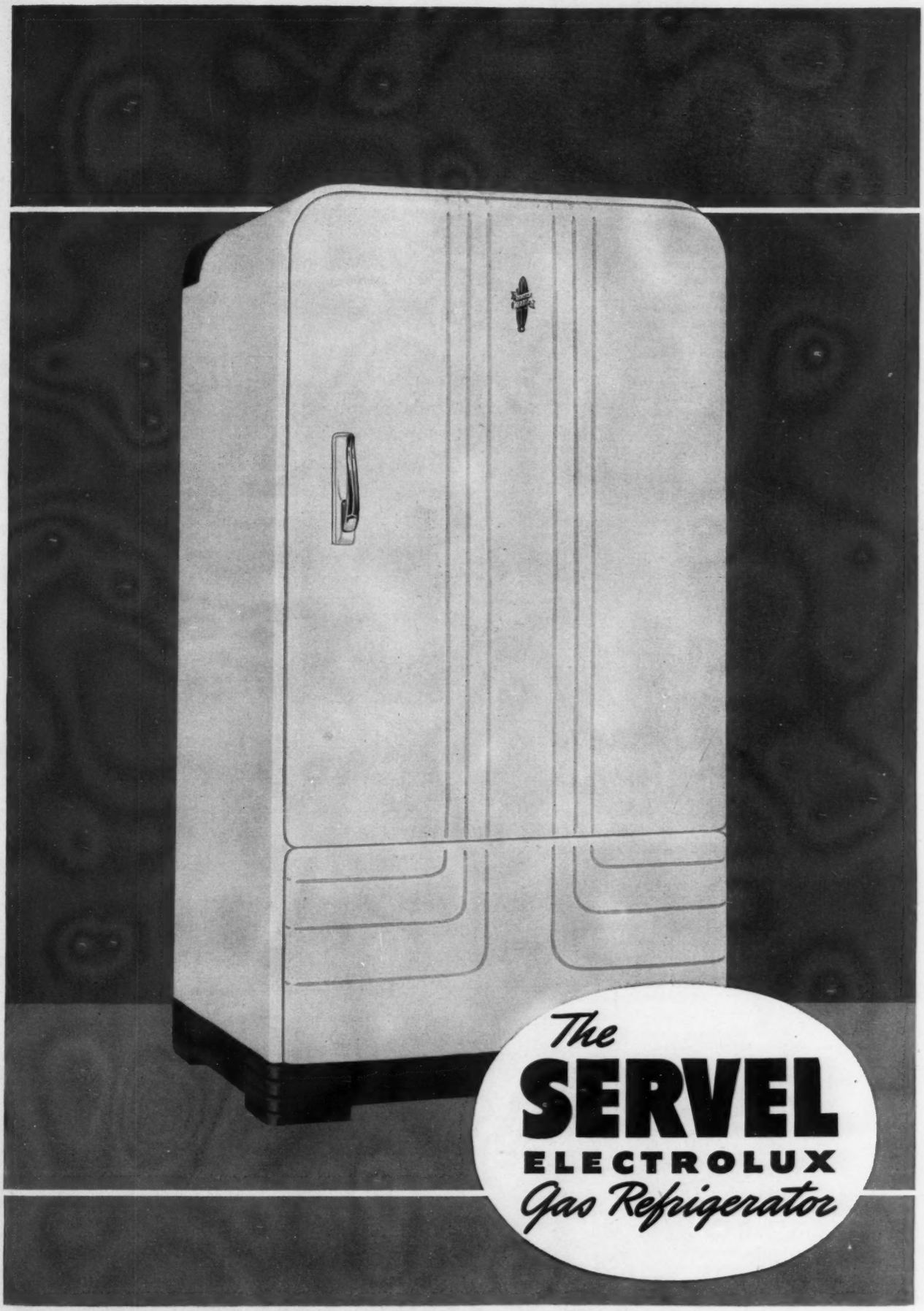
Gas Company executives, likewise, are increasingly favoring a more vigorous promotion of Gas Refrigeration, because they find its widening acceptance and unusual customer appeal make it an ideal appliance with which to wedge open a greater consumer use of gas service.

By getting people who are cooking with gas to add Gas Refrigeration in their kitchens, executives find they can protect their present gas load, stimulate the sale of other gas appliances, increase load without making added capital investment, publicize gas as the modern fuel and promote the use of "Gas for All Four Jobs."

Gas Refrigeration:

- **Protects Your Present Gas Load**
- **Builds New Load without Added Investment**
- **Stimulates the Sale of Other Gas Appliances**
- **Publicizes the Modernity of Gas**
- **Promotes "Gas for All Four Jobs"**

Wins Good Will for Gas and Gas Service


The
SERVEL
ELECTROLUX
Gas Refrigerator

OIL & GAS
Equipment Review

Reg. U. S. Pat. Off.

• **THE READER'S ATTENTION is called to the coupon in the lower right hand corner of this page. This coupon is printed for the reader's convenience and will enable him to obtain with minimum effort further information on any of the items or catalogs listed in this department. All he has to do is to "ring" on the coupon the number that corresponds to the number printed over the item in which he is interested, clip out the coupon, and mail it to GAS, 1709 West Eighth Street, Los Angeles, Calif. — Editor.**

For more information **"ring 3914"** on coupon

Gas Regulator

Trade Name: Type FF "Twin Stage" Regulator.

Application: Can be used with oxygen, acetylene, or hydrogen.

Features Claimed: Simplified construction with a unitary valve assembly, which is used in both stages. This assembly has only four parts — a small body, stainless steel spring, stainless steel ball, and special vulcanite seat which is operated by a monel metal pin. Seating is with instead of against the pressure. Each stage has a loose, replaceable diaphragm, removable and interchangeable inlets, adaptable to any tank or line connection for any type of gas. Noncorrosive cylindrical filter screens enclose seat units. The first stage may be purchased separately, and attached to practically any make of single stage regulator, converting it to two-stage control with only simple adjustments.

Description: It is another member of the Milburn Ball seat group, and the first stage of the Type FF can be adjusted to various pressures, thus permitting it to be used for different operations. After the selector is set, the delivery stage may be adjusted to any desired working pressure up to 200 lbs., or more, if specified. It operates smoothly, and permits uniform delivery. — *Alexander Milburn Co., 1493 W. Baltimore St., Baltimore, Md.*

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For more information **"ring 3915"** on coupon

Remote Control System

Trade Name: Varidrive Electric Remote Control Motor.

Application: For automatic control of the take-off shaft speed by means of a thermostat, float switch or other control.

Description: The control consists of a small worm gear reducer mounted on the Varidrive control case and connected to the Varidrive control shaft which changes the speed. The pilot motor is operated by thermostat, float switch or similar control through a cyclic relay or process timer. The thermostat or float switch controls the direction of speed change, while the cyclic relay governs the rate of change of the speeds. This new system of control should be of wide use in the ventilating and heating industries. — *U. S. Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif.*

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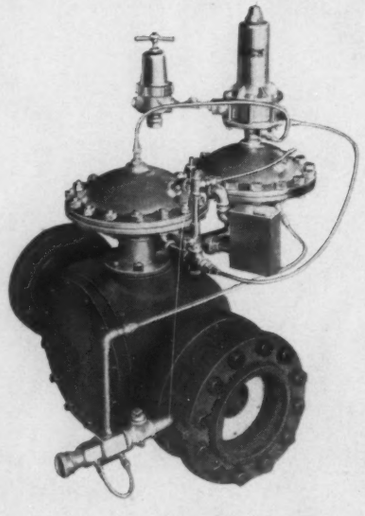
For more information **"ring 3916"** on coupon

Loading Regulator

Trade Name: EMCO High Pressure Balanced Valve Regulator System.

Application: This system provides automatic loading for EMCO high pressure balanced



valve regulators controlling outlet pressures in excess of one pound.

Features Claimed: Separate assemblies are used to make up the component parts in this system of loading. It is claimed that by using separate assemblies for the various parts, it is made possible to adapt the new automatic loading system to existing regulators; also to EMCO regulators now equipped with pilot loading heads. The actual arrangement of the parts can be varied so as to provide the most accessible and convenient installation or to conform with the dimensions of any vault or regulator house.

The diaphragm head has mounted on it an EMCO Type 39 Pilot loading regulator, so connected to the differential boosting head that as the differential pressure across this head increases, the pilot loading regulator diaphragm is more heavily loaded. This has the same effect as increasing the control spring loading. — *The Pittsburgh Equitable Meter Co., Pittsburgh, Pa.*

■ ■

For more information **"ring 3917"** on coupon

Engine Safety Cutout

Trade Name: P607A and P607B Engine Safety Cutout.

Application: For engines with a distributor type of ignition, the device is wired to break circuit on temperature rise or pressure fall. For engines with a magneto type of ignition, the opposite terminals are used which short circuits the primary of the spark coil to the ground. For diesel engines, the device is set up to control a solenoid valve installed in the fuel line to the injection system.

Features Claimed: No manual reset latch to keep the reset button depressed while the motor is being started; if the oil pressure does not build up, the motor will stop. Small 4- x ½-in. temperature element capsule which can be inserted in any ½-in. pipe tapping in the block. No separable well to install; a special packing gland is furnished. A mercury switch (S. P. D. T.) handles the switching action; clean contacts free from grime and dirt provide long, dependable, positive switching action. Small over-all dimensions: 6⅛ in. in height, 5$^{9}/_{16}$ in. in width, and 2$^{11}/_{16}$ in. in depth.

Description: This safety device is designed to protect stationery internal combustion engines by interrupting their operation if the lubricating oil pressure drops hazardously low or if the cooling water temperature rises too high. When using the Model "A" the manual reset button must be depressed until the motor starts and the oil pressure rises. The "B" model is designed for motors with automatic starting equipment

This coupon will bring you further information, catalogs, etc., concerning products described in the Oil & Gas Equipment Review Department of GAS. "Ring" the numbers of items which interest you, sign and mail this coupon to **GAS, 1709 West Eighth Street, Los Angeles, Calif.**

3914	3915	3916	3917	3918	3919	3920	3921	3922	3923
3924	3925	3926	3927	3928	3929				

October, 1940

Name.....**Position**.....

Company.....

Address.....

City.....**State**.....

where a means is provided to shunt the circuit around the P607B until the motor starts and the oil pressure rises to normal. —*Minneapolis-Honeywell Regulator Co., 2950 Fourth Avenue South, Minneapolis, Minn.*

■ ■

For more information **"ring 3918"** on coupon

CO_2 Analyzer

Trade Name: Fyrite.

Application: For measuring the percentage of CO_2 in the flue gases of boiler furnaces.

Features Claimed: A feature of the analyzer is the gas sampling equipment which includes a primary flue filter with a replaceable filtering thimble. A flue gas sample of known volume is pumped to the instrument by hand with a rubber bulb and trapped to the instrument automatically by pulling off the sampling hose. The instrument is then turned upside down and back again to mix the gas sample with the absorbing reagent. The suction created due to the complete absorption of the CO_2 pulls the absorbing fluid up to amount equal to the CO_2 absorbed. Consequently, its level shows the percentage of CO_2 in the gas. The entire operation, including pumping of the gas, will take less than a minute. The instrument is a plastic molding of water-white transparency and compact modern design. The gage fits snugly into the hand, and its proportions are balanced so that it is not easily upset when placing it on a table, bench or ledge.—*Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh, Pa.*

■ ■

For more information **"ring 3919"** on coupon

Cutting Machine

Trade Name: Model "K" Portable, Motor-Driven Gas Cutting Machine.

Application: For cutting steel of light or heavy section.

Features Claimed: The machine is powered by a Universal electric motor and will cut straight lines of any length, with square or beveled edges, and possesses a speed range from 3 in. to 60 in. per minutes, forward or reverse. An instant stop feature permits cutting of sharp angles, and a tracing feature provides for cutting irregular forms. A switch permits the machine to be reversed instantly.

Description: The Model K is streamlined and finished with durable black crackle and chromium. It weighs 45 lbs., complete with torch. A one-point oiling feeder line to all bearings provides lubrication constantly.—*The Harris Calorific Co., Cleveland, Ohio.*

■ ■

For more information **"ring 3920"** on coupon

Dry Lubricant

Application: To be used in eliminating sticking of clamps, tangent and leveling screws of transits and levels, for surveying work.

Features Claimed: It is a lubricant to which dust does not adhere.

Description: The lubricant consists of Acheson colloidal graphite suspended in carbon tetra-chloride. When applied, the carbon tetra-chloride evaporates, leaving a fine film of graphite serving as a dry lubricant.—*Acheson Colloids Corp., Port Huron, Mich.*

Before You Buy, Consult the *Latest Trade Literature* Concerning Equipment

This department of G A S will gladly mail you without obligation any of the selected bulletins listed below. Use the coupon on page 68 of this issue, indicating by number above those you desire.

For more information **"ring 3921"** on coupon

Leeds & Northrup Co.'s new 40-page catalog describes and illustrates thermocouples, and lists a comprehensive line of assemblies with their parts and accessories. Listed as Catalog N-33A (6).

For more information **"ring 3922"** on coupon

Publication 2939 completely describes five different methods of liquid level control. The publication has just been issued by the Cochrane Corp.

For more information **"ring 3923"** on coupon

The Revere Copper and Brass, Inc., has just issued two new booklets: "For Power Plants" and "For the Process Industries." They are illustrated and contain information pertaining to copper and copper alloys.

For more information **"ring 3924"** on coupon

Bonney Forge & Tool Works has just issued a new catalog covering their line of welding outlets for piping. The catalog illustrates and describes in detail the various types of outlets which they will make.

For more information **"ring 3925"** on coupon

A 12-page booklet, Form 2410, dealing with rock drill accessories, has just been issued by the Ingersoll-Rand Co.

For more information **"ring 3926"** on coupon

Bulletin No. 35-83, published by the American District Steam Co., describes in detail the ADSCO Flow Meter.

For more information **"ring 3927"** on coupon

The Hanover Uniform Co. has recently issued a catalog which features their Regulation Uniforms and All-Utility shirts.

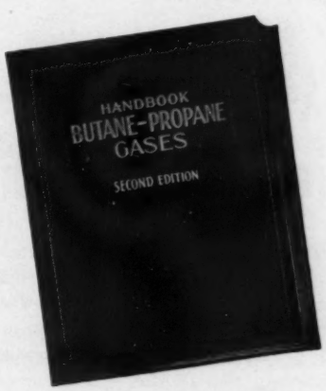
For more information **"ring 3928"** on coupon

Catalog K, issued by Julien P. Friez & Sons illustrates and describes controlling, indicating, and the recording of humidity temperature pressure. A complete price list is also included.

For more information **"ring 3929"** on coupon

DeBothezat Giant Fans are described and illustrated in their new catalog just off the press. The fans are used in the oil fields, on cooling towers and heat exchangers for recycling and repressuring plants.

HANDBOOK BUTANE-PROPANE GASES



415 Pages

CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design and Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricty, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Specal Uses: Volume Correction Factors: Transportation: Use with Other Gases: Analysis and Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

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The Natural Gas Magazine

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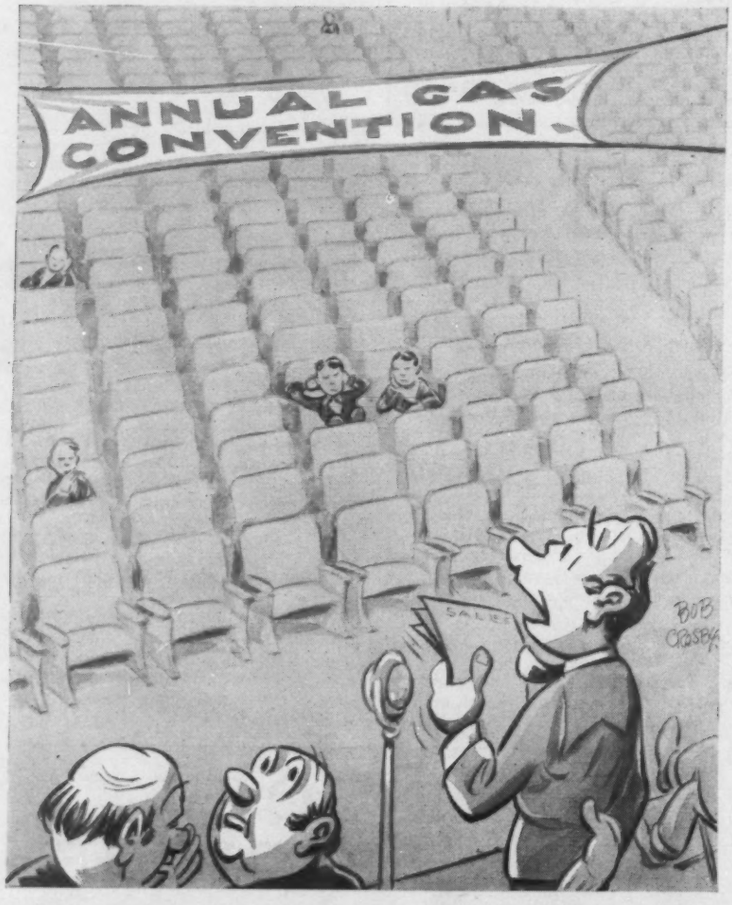
Los Angeles, Calif.

DOTTED LINE ROSCOE . . . . By Bob Crosby



"Roscoe worked three months on that paper, then his session comes the morning after the annual banquet and the day of the golf tournament . . . !"

Bulletin On Furnace Atmospheres Released By American Gas Association

THE American Gas Association, through its Committee on Industrial Gas Research headed by Mr. F. J. Rutledge, vice president of the United Gas Improvement Co., has been investigating phases of industrial gas combustion to provide data and other useful information which might help in furthering the use of gas for industrial processes.

Bulletin No. 11, "Composition of Furnace Atmospheres Resulting from Partial Combustion of Gaseous Fuels," summarizes all preliminary phases of this study.

The bulletin embodies data obtained from over 2500 observations of flue gas temperatures, gas rates, ærations, and more than 750 complete flue gas analyses. It contains original data showing relative concentrations of different flue gas constituents resulting from combustion of three different fuel gases encompassing nearly the entire range of variations in typical city gases when the air supply was varied from that required for complete combustion to the lowest which would support combustion.

Special sections are devoted to discussion of carbon monoxide-hydrogen ratios, carbon monoxide-carbon dioxide ratios, and occurrence of free oxygen in flue products. Effects of both combustion wall temperature and flue gas temperature on resulting constituents are noted, together with the relationship between composition of fuel gas and resulting flue products.

In addition, data are presented showing effect of air supplied for combustion on the volume of the various flue constituents per cu. ft. of gas burned, maximum flue gas temperatures developed, amount of heat in flue products at various temperatures, amount of gas burned per unit of combustion space, and flame length resulting under those conditions. It is reported that approximately 5 million B.t.u. per hr. per cu. ft. of combustion space could be burned with a minimum amount of air required to support combustion of natural gas, and about 4 million B.t.u. per hr. per cu. ft. of combustion space for manufactured gas under the same conditions. A practical interpretation of these observations, as well as a discussion of methods of producing controlled furnace atmospheres of desired composition, together with such relating factors as design of burner and combustion sample for operation under these reducing conditions rounds out the data presented.

Copies of Bulletin No. 11, "Composition of Furnace Atmospheres Resulting from Partial Combustion of Gaseous Fuels," may be obtained from the American Gas Association Testing Laboratories, 1032 E. Sixty-second Street, Cleveland, Ohio, or from the A. G. A. headquarters, at nominal cost.

■ ■

Kans. Commission Suspends Gas Production Tax

The Kansas Corporation Commission on August 1 suspended its assessment on natural gas produced in that state. The assessment of one-half mill per thousand feet went into effect in October, 1937, to meet expenses of administering the state gas conservation law.

It was lifted, the commission said, because it now has "sufficient monies to defray the costs and expenses of administering the act relating to the production of natural gas during the immediate future and in order that the assessment should not exceed the actual cost of administration."

■ ■

Natural Gas Displayed at Los Angeles County Fair

Natural gas is conspicuously represented in two displays put on under the auspices of Southern California and Southern Counties Gas Companies at the Los Angeles County Fair, which opened on Friday, September 13, at Pomona, Calif. Modern automatic gas appliances for domestic use are featured in one exhibit, while gas for industrial and agricultural purposes is the theme of the second display.

■ ■

Gas Planned For Hominy

Hominy, Okla., may grant a 20-year franchise to the Consolidated Gas Utilities Corp., Oklahoma City, Okla., giving the company the right to construct a plant and system.

1875
1880
1885
1890
1895
1900
190
19

Through the Years...
ROPER RANGES
Designed for Use with Gas

1930
1935
1940

New Staggered Top

One of the many exclusive features developed by Roper. Ample room for 4 large utensils. No hot handles! No reaching over or around! The most practical burner top ever designed.

Ever since the Geo. D. Roper Corporation was established over 55 years ago, it has been a prominent factor in the gas industry. Roper has worked consistently toward one goal: to build success by popularizing gas as a cooking fuel.

Thus down through the years Roper has been, and is today, a trail blazer in the gas range field . . . pioneering in improvements and features that cause housewives to want to cook with gas . . . and cooperating with gas companies and dealers in placing these advanced ranges in millions of kitchens throughout the nation.

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Chicago: 343 So. Dearborn Street; Atlanta: 901 William Oliver Building; Los Angeles: 2481 Porter Street; Philadelphia: 401 N. Broad Street; Newark: 110 Edison Street; Dallas: Santa Fe Bldg., Second Unit; Cincinnati: 626 Broadway; Oakland: 500 Kirkham Street; Cleveland: 2053 East 105th Street; Kansas City; Boston; Washington; Roanoke; Pittsburgh; New York; Denver.

ROPER GAS RANGES ARE IDEAL FOR USE WITH ANY TYPE OF GAS, INCLUDING BOTTLED GAS

F.P.C. Rules Mississippi River Fuel Corp. Is Public Utility

THE Federal Power Commission recently rejected the contention of the Mississippi River Fuel Corp., St. Louis, Mo., that it is not a public utility and that its proposed increased rates for natural gas sold to the Laclede Gas Light Co., St. Louis, Mo., were justifiable.

The Fuel corporation contended that the natural gas sold to Laclede is not for resale as it is mixed with manufactured gas before being sold to the public and that even if it is subject to the natural gas act, its prices to Laclede are, under the constitution, immune from regulation because they are contained in contracts entered into before the act became a law.

The commission also ordered a consolidated public hearing for October 7 concerning the formation, continuance and purposes of the syndicate which created, owns and controls the Mississippi River Fuel Corp., and the extent of the affiliation between the corporation and the companies from which it purchases its entire supply of natural gas.

■ ■

Metal and Industrial Gas Men Meet In Cleveland

The American Gas Association Combined Industrial Gas Exhibit, 1940 National Metal Congress and Exposition, will be held in Cleveland, Ohio, October 21-25, according to Harry W. Smith, Jr., director, industrial publicity. This is the annual meeting of the National Metal Congress and Exposition, sponsored by the A. G. A. Industrial Gas Section.

The Industrial Gas Section will take 5000 sq. ft. of space for exhibits of 15 manufacturers of gas-using equipment for the metal industries plus a central A. G. A. lounge and back-wall display. A group of gas companies serving the territory in and near Cleveland have combined to make a unified decoration for the display available and will supply extra men to handle it.

■ ■

El Paso Natural Gas Co. Adds Compressor Units

Due to increased business, the El Paso Natural Gas Co., El Paso, Texas, is installing one additional 800-hp. horizontal Cooper-Bessemer gas compressor units at its No. 5 and No. 6 compressor stations at Douglas and Benson, Ariz., according to C. C. Cragin, vice president and general manager. The estimated cost of these two new units is $106,000 and completion is scheduled for October 15.

These two stations were constructed in 1937 and two of the same type engines were installed in each station. The No. 5 station located near Douglas, Ariz., is at the beginning of the company's 217-mile 10¾-in. main line extension to Tucson and Phoenix, Ariz. The No. 6 station, near Benson, is on the same line.

■ ■

Minnesota Company Formed

The Willmar Gas Co., Inc., Willmar, Minn., has been recently organized with its office at 201 West Fourth Street, Willmar. The incorporators and first board of directors are: C. I. Tenney, D. C. Tenney, Paul W. Petterson, Roy A. Hendrickson, and Fred W. Putnam.

J. M. Kobabe Now Owner of Lee B. Mettler Company

James M. Kobabe, manager of the Lee B. Mettler Co., Los Angeles, Calif., recently acquired sole ownership of the company and announces that it will continue business as heretofore under the trade name of Lee B. Mettler Co.

J. M. KOBABE

Mr. Kobabe joined the Mettler Co. in 1926 at Kansas City, Mo., as sales and service engineer to the middle western area. Later his headquarters were moved to Chicago where installations of all types were sold and installed under his engineering direction. Upon the death of Lee B. Mettler in 1936, he was advanced to manager at Los Angeles.

Before joining the Mettler Co., Mr. Kobabe was in the employ of the R. G. Meyler Corp., Los Angeles, Calif.

■ ■

Empire State Gas Men Convene in New York

The annual convention of the Empire State Gas and Electric Association was held September 26-27 at the Westchester Country Club, Rye, N. Y. Among those on the program were: Chairman Milo R. Maltbie, Public Service Commission; Walter C. Beckjord, president, American Gas Association; Edward P. Prezzano, president of the State Association; H. E. Babcock, chairman of the Board of Trustees, Cornell University, and others.

Subjects discussed were: Problems of the Gas Industry, Association Policies and Activities, National Defense, Money Markets, Utility Regulation, Economic Trends, and others.

Convention arrangements were directed by Edward F. Barrett, president, Long Island Lighting Co., New York, N. Y.

■ ■

Four Indiana Cities May Have Hotter Gas Soon

Wabash and Winamac, Ind., have approved the proposal of the Northern Indiana Public Service Co., Hammond, Ind., to increase the heat content of their gas from 570 to 1000 B.t.u.'s, according to an announcement by N. C. Seward, division manager. The gas will be introduced and the lower rate schedule filed with the Public Service Commission of Indiana for approval as soon as Peru and Logansport, which are served by the same line, approve the change. The richer gas has been supplied to other northern Indiana cities since 1932, but now additional quantities of gas are available. According to company estimates, the gas rates will be reduced $1400 annually.

■ ■

Consolidation of Dallas Gas Companies Planned

An election to approve or disapprove the consolidation of the Dallas Gas Co. and the County Gas Co., both of Dallas, Texas, has been tentatively set for October 15. An ordinance ordering the election in Dallas will be prepared by City Attorney H. P. Kucera for submission to the council. The consolidation is expected to pave the way for gas-rate reductions later, it was stated.

GUARANTEED VIBRATIONLESS

Ratings 50,000 to 10,000,000 B.t.u.

Designed for Automatic Control Operation

WECO—N. G. E.

Series F 600—Install in any metal firebox or sectional boiler. Operates on straight natural gas and mixed gas to 800 B.t.u.

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F. J. Evans Engineering Co., Birmingham, Atlanta and Houston

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One of the newest and most modern chains of San Francisco restaurants, whose specialty is *Service* and *Quality Foods*, depends upon WEDGEWOOD *Custom Built* GAS RANGES for maintaining efficient and economical operation.

26 Range-Top Combinations

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Efficient Economical Operation

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20% More Cooking Area

•

Flexible Cooking Capacity

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Uniform Heat Distribution

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Rugged Streamline Style

•

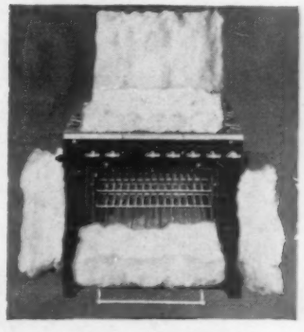
WEDGEWOOD RANGES ARE FACTORY BUILT FOR ALL TYPES OF GAS

DOUBLE OVEN MODEL

This splendid, serviceable WEDGEWOOD has two fully insulated ovens with two oven thermostats. Cooking Top is equipped with smoothly polished double griddle, two hot top sections and four open top burners. All Wedgewood heavy duty ranges are finished in lustrous and durable chromium to permit greater ease in cleaning.

EXTRA THICK INSULATION TOP, BOTTOM, SIDES AND DOOR

Extra-heavy insulation keeps the heat in—keeps the kitchen cooler and saves almost enough on the gas bill to pay for the range.



WEDGEWOOD *Custom Built* HEAVY DUTY GAS RANGES

JAMES GRAHAM MANUFACTURING CO. • Los Angeles, San Francisco, Newark, California • Portland, Oregon

INDUSTRY *Personalities*

L. L. Davis, salesman for the Oklahoma Natural Gas Co., Tulsa, Okla., for two and a half years, has been appointed manager of the Ardmore district, according to a recent announcement of **F. Padden**, Shawnee district manager.

Bruno Rahn, president of the Milwaukee Gas Light Co., Milwaukee, Wis., was recently appointed to the newly-created sales council of the American Gas Association.

Hord Hardin, executive vice president of the Mississippi Valley Trust Co., was recently elected a director of the Laclede Gas Light Co., St. Louis, Mo., to fill a vacancy on the board made when **William K. Koerner** resigned a year ago after being appointed a circuit judge. Other directors were re-elected at the meeting.

Ada Schroeder, of the home service department, the Gas Service Co., Kansas City, Mo., recently entered Freeman Hospital at Joplin for a major operation. According to reports, her rapid recovery is indicated.

Edmund Leach, assistant to the general manager of the North Central district, New England Power Association, Boston, Mass., was recently made manager of the Athol (Mass.) Gas & Electric Co., succeeding **A. Abbott Laughton**, manager for the past 24 years. Mr. Leach was graduated from Norwich University in 1928.

Mr. Laughton has been transferred to assistant to the general merchandising manager, Boston office, the New England Power Association.

R. M. Redding, general superintendent, Dallas Gas Co., and County Gas Co., Dallas, Texas, since 1929, resigned recently because of ill health. He joined the Dallas Gas Co., then owned by the H. D. Walbridge Co., in 1922 as engineer following his graduation from Texas A & M College.

Mr. Redding received high praise for his 18 years of service to the companies from **R. G. Soper**, president and general manager. He has contributed much to gas distribution practices through the writing of many convention papers.

George W. Martin, assistant general superintendent, was appointed to succeed Mr. Redding, and will continue as safety supervisor for the companies. Mr. Martin came to the Dallas Gas Co. in 1923 as assistant to **Wesley F. Wright**, vice president and operating manager. He was appointed purchasing agent in 1926 and manager of the buildings in 1934.

Fred A. Garrett, assistant purchasing agent, was named purchasing agent and building manager at the same time of the other appointments. He joined the companies in 1923 as assistant night inspector and was named day clerk in a shop office in 1924. In 1925 Mr. Garrett was transferred to the chart department and was named assistant purchasing agent in 1932.

John A. McIntosh was recently appointed sales manager of the Vacuum Gas Appliances Division, Rome, N. Y., of the Union Fork & Hoe Co., according to an announcement by **J. S. Nicholas**, executive vice president.

J. A. McINTOSH

Mr. McIntosh was first employed in the gas industry as a meter reader and a service man. For the past 15 years he has been associated with American Gas Products Corp. and subsequently with the American Radiator & Standard Sanitary Corp. in a sales capacity in various sections of the country.

Since 1936 Mr. McIntosh had been Long Island district manager of the gas division of the American Radiator & Standard Sanitary Corp.

Frank Thomas, district sales manager of the Oklahoma Natural Gas Co., Tulsa, Okla., was transferred recently to a similar position in Enid, Okla. Before coming to Okmulgee with the Oklahoma Natural Gas Co., he spent 12 years with the Montana-Dakota Utilities at Rapid City, S. D. and six months in Miami, Fla., with an air conditioning company.

E. L. Buelow, district manager, Community Natural Gas Co., Dallas, Texas, was recently elected chairman of the San Angelo, Texas, safety council.

Denton Borger, assistant secretary, Hope Natural Gas Co., Clarksburg, W. Va., was recently appointed secretary succeeding **S. E. W. Burnside**, who plans to retire.

Mr. Borger was formerly with the Peoples Natural Gas Co., Pittsburgh, Pa., and has been assistant secretary of the Hope Natural Gas Co. for 20 years.

James F. Moffatt, layout foreman, city division of the telephone department, Equitable Gas Co., Pittsburgh, Pa., retired recently after 34 years of service. Mr. Moffatt was born in Ireland and started with the Equitable Gas Co. in 1906.

Edward Ball, Division "K," Pittsburgh & West Virginia Gas Co., Grafton, W. Va., recently observed his 30th year service anniversary.

Jean Thompson, Boulder, Colo., recently became home service director of the Oklahoma Natural Gas Co., Tulsa, Okla. She will have supervision of all home service activities of the company in Ardmore, Healdton, Wilson and Ringling.

Miss Thompson majored in home econom-

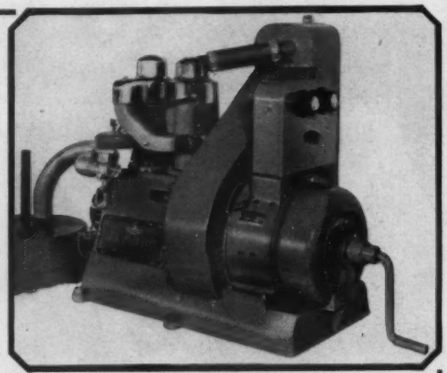
JACOBS

SPECIAL CATHODIC UNIT

Maximum Protection at Minimum Costs!

Designed exclusively for cathodic protection of pipe line Manufactured completely in our factory. Operates on natural gas or gasoline. Few moving parts—no valves, gears, belts or pumps to break down. Positive lubrication and temperature control. Lowest operating and maintenance costs on record. *Unconditionally guaranteed for one year!*

Write at once for complete details!



The JACOBS WIND ELECTRIC CO., Inc.

PIPE LINE DIVISION MINNEAPOLIS, MINN.

HOTEL CHELSEA RIGHT ON THE BOARDWALK

FOR RECREATION OR RELAXATION

Choose the Chelsea

FROM $6 WITH MEALS & BATH

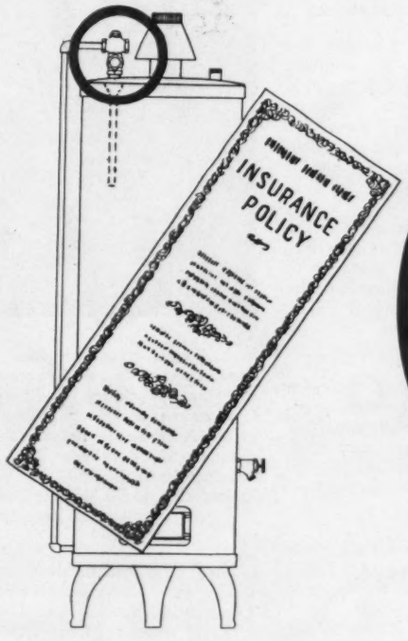
$3 ROOM ONLY & BATH Per Person 2 in a Room

Here you will find everything to further your comfort and enjoyment — outside ocean-view rooms . . . wide verandas for lounging . . . sun deck . . . beautiful dining room at the ocean's edge . . . superb cuisine . . . varied sports and entertainment. You'll like your fellow guests, too, and the delightfully friendly atmosphere of the Chelsea.

SPECIAL WEEKLY RATES

ATLANTIC CITY

JOEL HILLMAN • J. CHRISTIAN MYERS • JULIAN A. HILLMAN



Better Protection with KITSON Emergency Shut-off GAS VALVES

The valuable automatic water-heating load merits the utmost protection. Experience shows that even the best thermostats are apt to stick or jam. And then what? Why, nothing of any serious consequence if the job is equipped with a KITSON "Defender" Emergency Shut-off Gas-Valve. This valve, installed in the hot water outlet in direct contact with the water where it is hottest IMMEDIATELY SHUTS OFF THE MAIN GAS SUPPLY TO THE WATER HEATER, when the water temperature goes above the permissible limits of the thermostat setting. It is positive. It offers plus protection too because when the "Defender" acts, it shows that the thermostat is faulty.

Easily Serviced

It takes only a few minutes to change the chemical fuse and reset the valve. And this, of course, can be done when the fitter calls to repair the defective thermostat.

There are thousands in service. In fact, some gas companies have made them standard equipment on all automatic water heaters in their territory.

Test One for Yourself

We will be glad to send a sample for test and examination to any gas company in the United States. Be sure to specify the size. Also, ask for "Catalog A," covering the complete line of KITSON gas industry brass fittings.

A. G. A. APPROVED

KITSON COMPANY
2409-15 Westmoreland St., Philadelphia, Pa.
Manufacturers of Kitson Safety Controls for manual and automatic Water Heaters . . . Quality Brass Goods for Gas, Water and All Plumbing Uses.

ics at the Colorado Agriculture and Mechanic Arts College and attended the University of Colorado.

D. K. Hutchcraft, Mid-Continent sales manager of Clark Bros. Co., Inc., Olean, N. Y., has just returned to his Tulsa office after a business trip to Miami, Fla., followed by a holiday visit in Havana, Cuba.

Benjamin C. Adams was recently elected president and general manager of the Gas Service Co. and president of the Kansas City Gas Co. and the Wyandotte County Gas Co., all of Kansas City, to fill the vacancy left by the death of **Henry L. Doherty**. Mr. Adams formerly has served as vice president and general manager of the Gas Service Co. and vice president of the other two companies.

B. C. ADAMS

Officers of the Gas Service Co. now are **B. C. Adams**, president; **Harry Warner**, secretary and treasurer; **J. R. Abercrombie**, assistant secretary and assistant treasurer; and **E. E. Laws**, **F. D. Young**, and **F. L. Blackburn**, assistant secretaries.

Kansas City Gas Co. officers are **Mr. Adams**, president; **T. J. Strickler**, vice president and general manager; **Mr. Warner**, treasurer; **M. J. Barry**, secretary; **W. G. Kelley**, assistant secretary and assistant treasurer; **Mr. Abercrombie**, assistant treasurer; and **Mr. Blackburn**, assistant secretary.

Officers of the Wyandotte County Gas Co. are **Mr. Adams**, president; **W. H. McKenzie**, vice president and general manager; **I. W. McKee**, secretary and assistant treasurer; **Mr. Warner**, treasurer; **Mr. Abercrombie**, assistant secretary and assistant treasurer, **Mr. Blackburn**, assistant secretary.

W. L. Hayes, new business manager, the Montana-Dakota Utilities Co., Minneapolis, Minn., was recently appointed CP regional manager for Nebraska, Minnesota, Montana, South Dakota, North Dakota, and Iowa. He will serve on the American Gas Association Domestic Range Committee for the rest of this year and for all of 1941.

Russell Caldwell, local manager for the Ohio Fuel Gas Co., Columbus, at Sterling, Ohio, was recently promoted to manager of the Urbana office. He has been head of the London office for three and one-half years. **Eugene Kidwell**, of Springfield, will succeed Mr. Caldwell in Sterling.

Z. T. Caldwell, district manager, Crown Stove Works, Chicago, Ill., was recently appointed district sales manager in Texas, New Mexico, Oklahoma, Kansas, Arkansas, Louisiana, Mississippi, and the western tip of Missouri, according to an announcement by Miss G. Dinelli of the Chicago office.

Col. W. F. Rockwell, president, Pittsburgh Equitable Meter Co., has announced the election of **A. D. MacLean** to the vice presidency of the company.

Mr. MacLean is a graduate of the School of Engineering, Harvard University. Immediately upon receiving his degree, he enlisted in the Army Air Service Corps, serving therein until the Armistice in the World War. His first connection in industry was with the Ashton Valve Co. of Cambridge. Mass., as chief draftsman. He later accepted a position with the Engineering Department of the New Departure Division of General Motors Corp.

L. L. Baxter, vice president of the Arkansas Western Gas Co., and secretary of the Southern Gas Association - Southwestern Gas Sales Conference, and C. B. Wilson, sales manager of the Arkansas-Louisiana Gas Co. and president of the Southern Gas Association, discussing plans for the next convention of the Association to be held in Dallas, Texas, some time in February.

E. J. Hatzenbuehler, manager of industrial and commercial sales department of the Community Natural Gas Co., Dallas, Texas, recently announced the appointment of three junior industrial engineers to serve in two divisions of the company.

Louis N. Beal, Jr. has been assigned to the northern zone of the Abilene division, assisting **John T. Trotter**, industrial engineer for the zone. **R. O. Pearson, Jr.**, formerly sub-district manager at Haskell in the Stamford district, has been assigned to the southern zone of the Abilene division, assisting **W. P. Stone**, industrial engineer for that zone. **R. B. Thompson**, formerly storekeeper for the Garland district, was assigned to the Corsicana division to assist **Joe Kaufman**, division industrial engineer. Mr. Beal and Mr. Thompson were graduated from the Texas College of Arts and Industries, and Mr. Pearson from Texas A & M College.

E. F. Schmidt, vice president and operating manager, Lone Star Gas Co., Dallas, Texas, announces that the automobile department, formerly under the supervision of **Fred L. Richardson**, recently elected a vice president, has been made a division of the purchasing department under **B. R. Newbery**, purchasing agent. **W. L. Carter** of the automobile department will continue in direct charge of fleet operation.

Because of a recent illness which was further aggravated by an injury sustained during a vacation, **Lee Holtz**, general superintendent of distribution, Southern California Gas Co., relinquished his duties on Sept. 30, 1940, according to a recent announcement by the company. Mr. Holtz has been associated with the company since 1922.

Elting Henderson will assume the duties of general superintendent of distribution in charge of the street department, the meter department and miscellaneous matters. Carl A. Renz will become general superintendent of customers service.

J. H. Smith, manager of the Anniston, Ala., office of the Alabama Gas Co., Birmingham, Ala., was recently transferred to sales manager of the Montgomery office. **Richard Puryear**, manager of the Selma operations, will succeed Mr. Smith at Anniston.

Charles L. Dill, Jr. will take Mr. Puryear's old position and **C. W. Whiteside, Jr.** will succeed Mr. Dill.

INSTALLING 20" MONO-CAST DOUBLEX SIMPLEX PIPE FOR GAS DISTRIBUTION

Photo shows 20" Mono-Cast Doublex Simplex Pipe being installed by the Birmingham Gas Co. in extensions to their distribution system serving Birmingham, Ala., during September, 1940. This is another example of how prominent gas companies throughout the United States are turning to Mono-Cast Doublex Simplex Pipe on account of its inherent resistance to corrosion, high physical strength, bottle-tight joint, and exclusive features which assure lowest installation and maintenance costs. Now available in sizes from 3" to 48", inclusive, with a complete line of fittings.

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OBITUARIES

John M. Wilson

John M. Wilson, chairman of the board of the National Supply Co., Pittsburgh, Pa., died recently in his home at the age of 64. Mr. Wilson became president of the company in 1924 and in 1939 was named chairman of the board.

He was taken ill in 1902, while with the National Supply Co., and returned to Franklin, Pa., to regain his health. After a year of recuperation, he entered the Franklin Trust Co. and remained with them until 1908 when he rejoined the National Supply Co.

Mr. Wilson graduated from Bucknell and Harvard universities and joined the sales staff of the National Supply Co. at Beaumont, Texas. His father was one of the company's founders and presidents.

■ ■

Edward C. Uhlig

Edward C. Uhlig, formerly chief chemist, Brooklyn Union Gas Co., Brooklyn, N. Y., died recently at his home at the age of 72. He had retired from active service last July 1 of this year.

Mr. Uhlig joined the Brooklyn Union company in 1904 as a chemist and just prior to his retirement was honored at a dinner by the company. For the past 16 years he was educational vice president of the Gas Club; was a member of the American Gas Association and many other clubs.

■ ■

Denis Alexandre Coste

Denis Alexandre Coste, 79, founder of the natural gas industry in Canada, died recently at Chatham, Ont. In 1889, he and his brother, the late Eugene Coste, found natural gas in Essex County, Ont., and drilled the first commercial gasser in Welland County.

He was director and first vice president of the Volcanic Oil & Gas Co.

■ ■

C. C. Hendriksen

C. C. Hendriksen, organizer and president of the Minnesota Natural Gas Co., Worthington, Minn., died recently at his home in Minneapolis after a heart attack. He was 59 years old.

The Minnesota Natural Gas Co. was organized a few years ago from the Worthington Gas Co., which served Worthington, Minn. with manufactured gas. Mr. Hendriksen has been president since the new natural gas company was formed.

■ ■

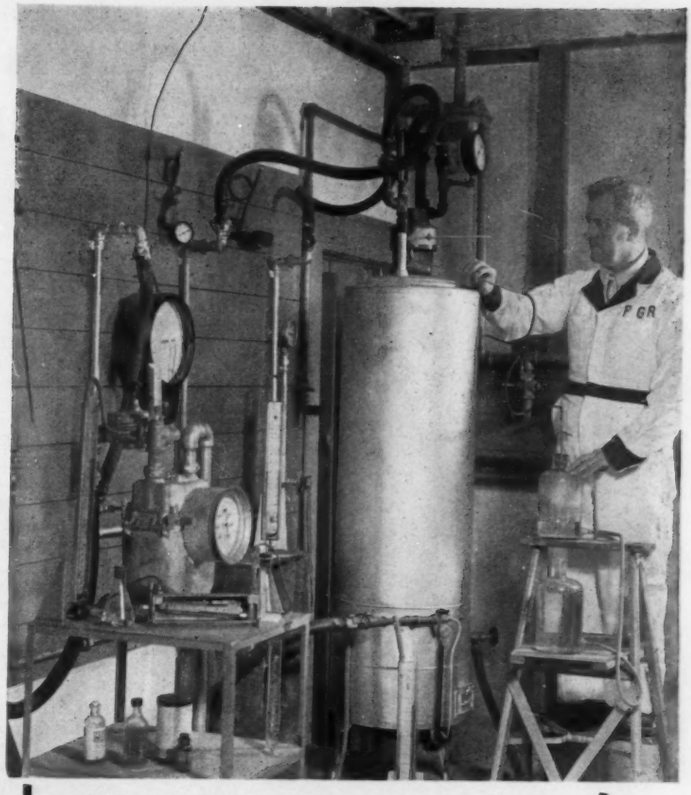
Henry J. Robbins

Henry J. Robbins, 64, for 24 years Corsicana district manager of the Community Natural Gas Co., Dallas, Texas, died recently of a heart attack. He retired from active duty in 1939 because of a chronic ailment, but served in a semi-official capacity until his death.

■ ■

Edgar L. Shultz

Edgar L. Shultz, formerly manager of the Ridgewood office, Brooklyn Union Gas Co., Brooklyn, N. Y., died recently at the age of 81. He joined the Citizens Gas Light Co. in 1889 and was appointed to his final position in 1916. He was with the company 50 years.



Advancement

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"PACIFIC" research and engineering account for many important contributions to greater efficiency in gas heating equipment and the consequent broadening of the market for appliances and increased use of gas. Pioneer in the field, a gas appliances "specialist" rich in experience covering 27 years, "Pacific" continues to build on a sound, time-tested base, progressively improves its products. In the consideration of gas heating equipment, self interest requires appraisal of the "Pacific" Line which includes everything from Radiant Heaters to big, streamlined Forced-Air Units for winter air conditioning and summer ventilation.

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CURRENT Reading

Huge Mechanical Drilling Rig Is Powered by Internal Combustion Engines. *California Oil World*, August, 1940, pp. 3, etc. Described and illustrated in this article are a number of mechanical rigs powered by internal combustion engines. These drilling units are far advanced over their early counterparts developed in mid-continent and Gulf coast operations. With the rigs shown, the old disadvantages of stalling, failure due to overspeeding, difficulties in reversing direction of power, difficulties in maintaining pressure without circulation, and the like, have been overcome in decisive fashion.

Forecasting Sales. *Policyholders Service Bureau, Metropolitan Life Insurance Co.* The 55-page report analyzes the factors considered by 48 companies in making forecasts: such as conditions within the company, conditions within the industry, conditions within the customers' industries, and the general business outlook. The sources most frequently used to gather this information are described. The study discusses the various ways companies fix responsibility for forecasts, the periods covered and interim breakdowns, and the statistical methods used to draw up data and make analyses. Half the report is given over to case studies which illustrate how 19 individual companies are handling forecasting.

Transportation: Economic Principles and Practices — Emory R. Johnson, Grover G. Huebner, and G. Lloyd Wilson; 678 pages; cloth; maps and charts; published by D. Appleton-Century Co., 35 W. 32nd St., New York, N. Y.; $4. Each of the five kinds of transportation—railroad, pipe line, air, water, and highway—is covered by the authors who, 12 years ago, published a prior text. *Principles of Transportation.* The business and economics of transportation as a whole, and of the five component parts, take up the major part of the book.

Extinguishing Fires in the Chemical Industry. *Chemistry and Metallurgy*, Aug., 1940, pp. 548-550. Chemical industry in general necessarily operates with a thin margin of safety because of the fire and explosion hazards involved in the storage, handling and processing of many materials which in themselves are susceptible to ignition in one form or another. To minimize the danger to both life and property, it is essential that fires be anticipated and that proper methods of fighting them be available for instant use wherever and whenever needed.

Combustion Systems, Controls for Gas-Fired Boilers — Henry Cooney. *Oil and Gas Journal*, Aug. 22, 1940, pp. 61, etc. The American Gas Association classifies the combustion systems as follows: 1. Atmospheric. 2. Pressure. (a) Air compressed. 1. Without automatic proportioning. 2. With automatic proportioning. (b) Gas compressed. 1. Without automatic proportioning. 2. With automatic proportioning. (c) Mixture compressed. 1. Without automatic proportioning. 2. Without proportioning. This article contains brief descriptions of these systems. They are given with the view of showing their adaptability to automatic combustion control.

Natural Gas Compressor Station Operation and Maintenance Problems — C. S. Kenworthy. *Petroleum Engineer*, Midyear, 1940, pp. 100, etc.

Phase Equilibria in Hydrocarbon Systems. The Methane-n-Butane System in the Two-Phase Region — B. H. Sage, B. L. Hicks and W. N. Lacey. *Industrial and Engineering Chemistry*, Aug., 1940, pp. 1085-1092. Compositions and specific volumes of the coexisting phases of the methane-n-butane system were determined throughout the two-phase region at temperatures above 70° F. From these data equilibrium constants for methane and n-butane were computed and have been reported as functions of state. From other unpublished data the fugacities of the components in the coexisting phases were established.

Measurement of Arc-Welding Technique — H. S. Card. *Power Plant Engineering*, June, 1940, pp. 66-68. This article is of particular interest to those concerned with the practice of arc-welding in any of its various applications. The author discusses a method by which the skill or technique of the operator can be accurately measured by means of an instrument known as the Acronograph.

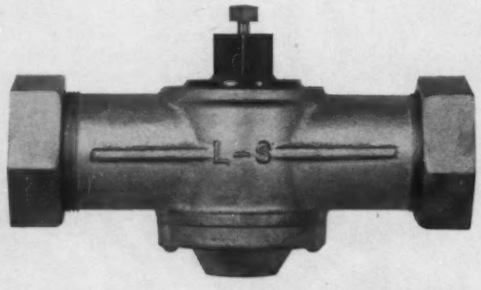
Gas and Oil Separation Practices in Deep Fields of California — W. A. Sawdon. *Petroleum Engineer*, Aug., 1940, pp. 42, etc. Two methods employed: Two-stage separation at the well and divided separation with high-stage separation at the well and low-stage separation at a central station. Describes the two methods.

Pamphlet No. 22 — Leverett S. Lyon and Victor Abramson. Published by the Brookings Institution, Washington, D. C. This pamphlet is a summary of the two-volume study entitled *Government and Economic Life.* The authors have drawn freely on every part of the two volumes.

Careful Cost Study Leads Gas Company to Selection of Cathodic Protection —H. C. Gear. *Petroleum Engineer*, Aug., 1940, pp. 29-32. The Lone Star Gas Co.'s forecast of future expenditures for maintenance of line indicates electrical protection will pay dividends in highly corrosive area.

The Lattimer-Stevens Company

LUBRICATED STOPCOCKS WITH COMPRESSION GASKET ENDS



Columbus, Ohio

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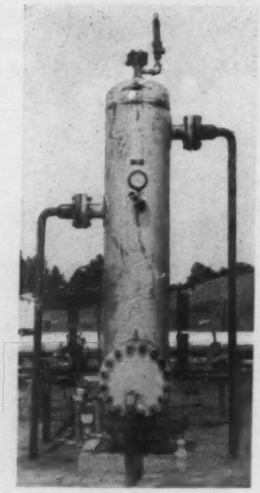

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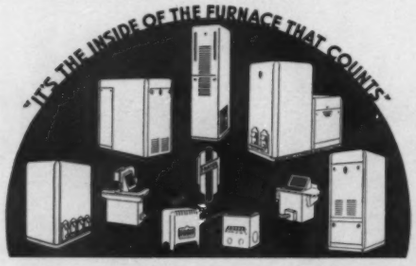

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Fraser units come in types and sizes to fill every heating need. Their simplified assembly, wired controls and many other features assure time-saving installation. Their years of service-free operation and maximum operating efficiency combine to build your profits and user satisfaction.

Fraser Furnace Company, already one of the country's largest manufacturers specializing exclusively in gas-fired warm air equipment, has recently doubled manufacturing space in order that shipment may keep pace with constantly increasing demands.

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MODERN *Products*

Heavy Duty Gas Fired Boiler

Bastian-Morley Co., Inc., LaPorte, Ind.
Model: Series 60.
Description: The boiler sections are so cast that when assembled into a complete unit they form a proper drop header and Hartford return loop as an integral part of the boiler. No matter how many cast iron sections are used, from 6 to 31, the system of passages, baffles and drips formed by joining the sections together automatically builds up a perfect header for each combination. The header is an integral part of the sections, the steam is subjected to the heat of the flueway, providing a superheater feature. Being built-in, the header is protected against heat loss by the boiler's insulation. The boiler has been designed for big installations, steam or hot water. Input ratings range from 800,000 B.t.u. to 4,800,000 B.t.u. The sections have the patented "Staggered Heat Travel" fins which extract a maximum of heat from the fuel burned. It also has a gas-actuated, "safe side" control system.

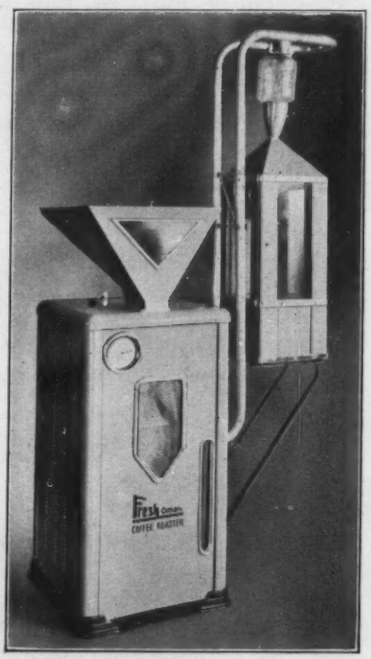
■ ■

Gas Range

American Stove Co., Cleveland, Ohio.
Model: All-American.
Description: This newest development embodies request features based on a survey of 88 questions, sent to 615 home economists. It is larger, having more top area, larger oven and broiler, and an oven big enough for a 25-30 lb. turkey, or a complete oven dinner. The oven size is 18-in. wide, 14-in. high, 20-in. deep. Over-all size

of the stove is 42-in. by 26½-in.

It has a swing-out broiler which may be used for broiling a whole chicken, and extra space beneath it for a warming compartment. Extra space is provided between top burners and four 12-in. utensils may be used simultaneously. Cooking grates are flush with the range top. It has two disappearing back shelves which may be pulled out when needed, smartly designed oven vent grills, a minute minder, large utensil drawer, an open base to permit cleaning underneath and provide toe-room for cooks. It also has a red wheel oven regulator, cross-fire oven burners, gas-saving top burners, Hi-Lo valve, automatic lighting oven, broiler and top burners.



Coffee Roaster

Fresh-omatic Coffee Roasting System, 1213 Pine St., St. Louis, Mo.
Description: This roaster is designed to use gas exclusively for dry-roasting coffee in small quantities daily in retail stores. It is a complete plant in itself, occupies less than 5 sq. ft. of space. It automatically weighs green coffee beans, projects them into the roasting oven where they are dry-roasted by gas, are then air-cooled, sorted and finally conveyed to a glass dispenser from which they are removed, ground and packaged by the retailer. A. C. Waldvogel, designing engineer, is the inventor.

■ ■

Australian Volunteers Are Remunerated For Services

All officers and employes of the Colonial Gas Association, Ltd., Melbourne, Australia, and its subsidiaries, who voluntarily enlist for service overseas in any of the units of the defense forces of the Commonwealth will have their military pay substantially augmented so that no undue hardship will have to be borne by their dependents

Safety Record Set by United Gas Pipe Line Monroe District

ONE million man-hours without a lost time accident has passed at close of work September 6 by an average of 300 employes of the Monroe (La.) district, United Gas Pipe Line Co., J. Grady Hicks, district manager, announced recently.

Not since August 26, 1938, has United's safety flag been lowered to signify a disabling injury in the district, and during that time as many as 600 men have been employed simultaneously. Average number of employes in the district is 300, Mr. Hicks said.

Recognition of the safety record was given at a Victory barbecue September 7, at Monroe, at which N. C. McGowen, president of United and associated companies, presented a safety award plaque honoring the district for winning the 1939 safety contest sponsored by the company. More than 1000 persons were present.

Application has been made for American Gas Association and American Petroleum Institute certificate awards, Cecil L. Hightower, safety director, said.

■ ■

Pacific Gas and Electric Plans Changeover for Eureka, Calif.

Natural gas service for the city of Eureka, Humboldt County, Calif., replacing the present service of manufactured gas, is planned for the near future, according to an announcement by P. M. Downing, vice president and general manager of the Pacific Gas & Electric Co., San Francisco, Calif.

A contract has been signed between the P. G. & E. and the Texas Co., whereby the latter will furnish gas from three wells recently drilled at Fernbridge, 14 miles south of Eureka. From this point a 4½-in. main is to be laid to connect with existing distribution system for Eureka. Cost of the project is estimated at $97,000, which includes $10,000 for adjusting customers' appliances to the use of natural gas.

■ ■

Coal Industry May Pattern Testing Program After A.G.A. Laboratories

The coal industry is contemplating setting up an appliance testing program for the coal industry patterned after the American Gas Association's appliance testing program, according to editorial comment in the June issue of *Coal-Heat*. The editorial which accompanied a reprint of an article by R. M. Conner, director, A.G.A. Testing Laboratories, said in part:

"Since 1925, the American Gas Association's laboratories have approved more than 30,000 models of all types of gas-burning equipment. This work has contributed immeasurably to the sale of gas."

■ ■

Pennsylvania High School Conducts Classes on Gas

The Oil City (Pa.) High School is now conducting its initial classes in the rudiments of oil and gas production and refining operations. The curriculum, based on suggestions by refining officials and production engineers, calls for four semesters including 1080 hours of shop work and a corresponding number of hours in the related course of study.

Russell R. Buckham, former chief chemist of the James B. Berry Sons Co., Inc., instructs the classes and has direct supervision of the course.

■ ■

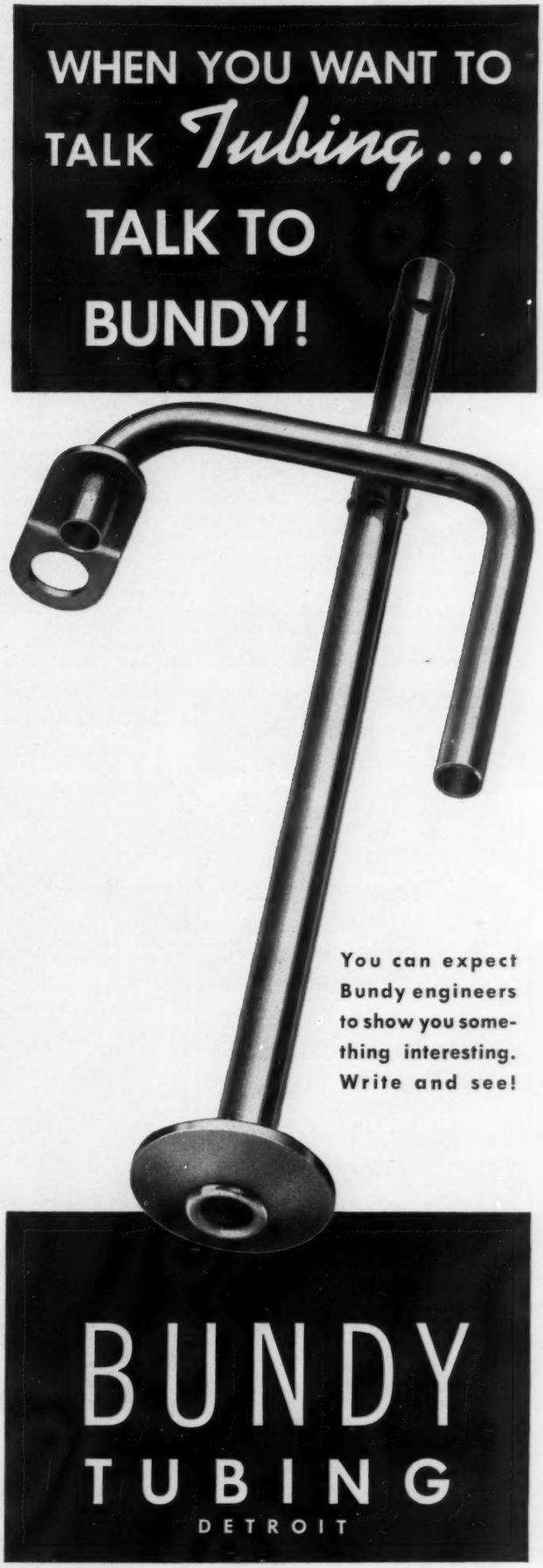
Monthly Meeting of S.C.M.A. Held In Montebello, Calif.

The Southern California Meter Association held its monthly meeting at the French Cafe, Montebello, Calif., September 26. Guy Corfield, research engineer, Southern California Gas Co., Los Angeles, presented a paper giving the highlights on the fundamental causes of external pipe corrosion.

■ ■

Nazi Bombs Do Not Explode English Gas Holders

Gas holders will not explode if hit by a bomb, according to the August 5 issue of the *Gas Times*, a London publication. They quote from an English newspaper that a bomb was dropped from sufficient height to pierce the holder and drop into the water beneath. The holder was destroyed by fire, but no explosion resulted.



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STANDBY

Oklahoma Association Holds Gas Division Meeting

THE program prepared for the one-day meeting of the Gas Division, Oklahoma Utilities Association, at the Biltmore Hotel, Oklahoma City, Okla., September 25, included addresses, informal talks and discussions upon subjects of interest to gas company executives and employes.

A. F. Potter, Gas Service Co., Bartlesville, the 1940 chairman of the Gas Division, arranged to give an hour, morning and afternoon, to general discussion in addition to papers and addresses prepared for delivery on the following subjects: "Gas Engines," presented by E. A. Bartolina, Consolidated Gas Utilities Corp., Bartlesville; "Duties of a Local Manager," Clyde Halloren, Gas Service Co., El Dorado, Kan.; "How to Prevent Accidents," Paul Pinson, Oklahoma Natural Gas Co., Tulsa; "Natural Gas History," Ross Stuntz, Cities Service Gas Co., Bartlesville; "Gas Air Conditioning," Don Mayne, Williams Oil-O-Matic Heating Corp., Bloomington, Ill.; "Dealers' Aids in Promoting Gas Sales," W. L. Woodward, Zenith Gas System, Inc., Alva; "Time, Temperature and Velocity Type Booster," Charles D. Peterson, Fisher Governor Co., Marshalltown, Iowa.

Frank B. Long, president, Oklahoma Utilities Association, and vice president, Oklahoma Natural Gas Co., and N. G. Welty, editor, the *Examiner*, Bartlesville, Okla., also were scheduled for addresses at the noonday luncheon.

■ ■

Ohio Fuel Gas Co. Is Building $330,000 Compressor Plant

The Ohio Fuel Gas Co., Columbus, Ohio, will complete, about November 15, a $330,000 compressor station near Mount Sterling, Ohio, according to F. E. Kidwell, local manager of the company.

The steel building will be 76 x 79 ft., according to D. R. Croft, general superintendent of the compressor division, and the station will have one 1350- and two 675-hp. units.

Gas from Crawford station at Sugar Grove, 50 miles east, will be pumped through the new station to serve Springfield, Dayton, Piqua, Sidney and other western Ohio markets. Thirty thousand dollars will be spent in relaying pipe lines to the new station.

Altman-Coady Co., Columbus, Ohio, is the general contractor.

■ ■

Shell Oil Co. Will Construct Toluene Plant at Houston

THE Shell Oil Co. will begin construction immediately of a new Toluene manufacturing plant at Houston, Texas, which will produce 2,000,000 gals. a year and can be expanded to produce 7,000,000 gals. Toluene is the basic ingredient of T. N. T.

It is indicated that the petroleum industry might be called upon to produce from 80,000 to 130,000 gals. per day of the estimated wartime needs of slightly less than 40,000,000 gals. annually.

Prior to 1917 less than 2,000,000 gals. was manufactured annually as a by-product of steel mill operations, and it may develop that production of toluene from petroleum sources will be utilized only as a secondary source of supply, as production by coke plants, tar refineries, and other establishments now exceeds 20,000,000 gals. annually as compared with the output of less than 2,000,000 gals. in 1914 and 10,000,000 in 1917.

■ ■

Lone Star Completes Line From Opelika To Trinidad

The Lone Star Gas Co., Dallas, Texas, recently completed its 27-mile 12-in. line from the gas field north of Opelika to the main line system at Trinidad, Texas. At Opelika, Texas, the Shamrock Gas Co. will install two 600-hp. compressors for the recycling plant which will be operated in connection with the Lone Star properties.

■ ■

Plant Protected From Flood

J. R. A. Hobson, director of the municipal gas plant, Richmond, Va., reports that the recent 25-ft. flood stage of the James River did not affect the operation of the plant. In 1936 the city spent $100,000 in improvements to protect it from floods up to a 35-ft. stage.

A gala open house to celebrate the completion of **Sprague Meter Co.'s** new West Coast Branch office building and warehouse was held at the new quarters, 2840 East Eleventh Street, Los Angeles, on Saturday, September 22. **F. L. Fairchild**, president of the company, who came west for the occasion, and **E. H. Roseberry**, vice president and branch manager, acted as host to the many industry members who attended the gathering. The structure is one story, grout-lock brick with trussed arched roof, concrete floors and covers 15,000 sq. ft. In addition to offices and storage space for meters, a stock and shipping room and tool and proving room are provided. Cost of the project was $40,000.

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For years of Satisfactory Service!

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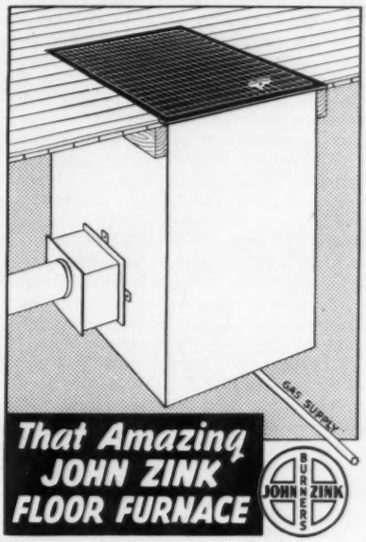

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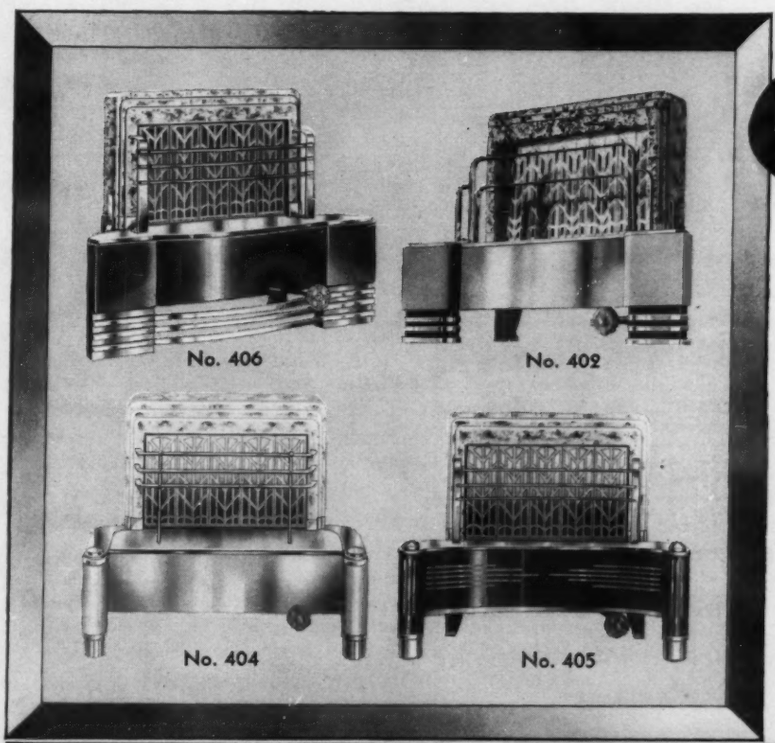

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FPC Orders Joint Hearing On Planned Wisconsin Line

The Federal Power Commission has ordered joint public hearings with state regulatory commissions to be held at Madison, Wis., on October 7, 1940, on the applications of the Western Natural Gas Co., Wilmington, Del., and the Independent Natural Gas Co., Bartlesville, Okla., for certificates of public convenience and necessity for the construction and operation of natural gas pipe lines into the state of Wisconsin, terminating at Milwaukee.

Western Natural Gas Co. has applied for a certificate for a pipe line extending from the Hugoton field in southwestern Kansas, a distance of 770 miles direct to Milwaukee, running through Iowa and perhaps with laterals into Nebraska or Missouri or both. Estimated cost will amount to approximately $30,000,000, according to Paul Kayser, president.

The Independent Natural Gas Co. has applied for a certificate for the construction of a line extending from Sherman County in the Texas Panhandle to Milwaukee, a distance of approximately 877 miles. Estimated initial construction cost is given as $28,698,000.

■ ■

U. S. Court of Appeals Blocks Chicago Rate Cut

Judge Will M. Sparks of the United States Circuit Court of Appeals issued a temporary order recently restraining the Federal Power Commission from enforcing its order for the Natural Gas Pipe Line Co. of America, Chicago, Ill., and the Texoma Natural Gas Co. to reduce the gas rates in the Chicago area $3,750,000 annually. The present rate schedule will maintain until the schedule has been acted upon. (*GAS*, Sept., 1940, page 78.)

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Appalachian Gas Measurement School Registers 446 Men for Short Course

THE Appalachian Gas Measurement Short Course, which for the past several years has been jointly conducted by West Virginia University and the Public Service Commission of West Virginia, will from now on be sponsored by the American Gas Association. This announcement was made by A. G. A. President Walter C. Beckjord, speaking before the record attendance of 446 gas men who came from every section of the Eastern and Southern United States to register for the 1940 Short Course, which was held at West Virginia University, August 19, 20, and 21. Ray W. Hitchman, superintendent of measurement for United Gas Fuel Co., at Charleston, W. Va., was chairman for the meetings.

Other speakers at the general sessions included Dr. C. E. Lawall, president of the university; C. R. Bellamy, Columbia Engineering Corp.; Dr. Paul Price, West Virginia Geological Survey; A. J. McClellan, Manufacturers Light & Heat Co.; C. C. Phillips, Ohio Fuel Gas Co.; Thomas R. Weymouth, Columbia Gas & Electric Corp.; and John Diehl, American Meter Co.

Meetings for the entire registration were held during the forenoon of each day. Speakers covered the field of measurement and control in a broad sense so as to be applicable and of interest to everyone attending the school. The afternoon sessions were devoted to classroom study of specific equipment and problems relating to gas measurement and regulation. These classes were conducted for the most part by engineers from the various equipment manufacturers. Displays by the participating manufacturing companies were located in the university armory.

Walter C. Beckjord (center), A. G. A. president, chats with President Charles E. Lawall (right) of West Virginia University, and Chairman R. W. Hitchman of the Appalachian Gas Measurement Short Course.

A highlight in the 1940 session was the annual banquet and entertainment attended by over 500 registrants and guests. J. K. Buchanan of the Monongahela West Penn Public Service Co. presided as toastmaster and called upon the following speakers: Dr. Lawall, representing the university; Mr. Beckjord, representing the A. G. A.; H. J. Wagner of the Public Service Commission, representing the state; and Col. W. F. Rockwell, president of Pittsburgh Equitable Meter Co., representing equipment manufacturers.

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Heating and Ventilating Men Hold Fall Meeting

The American Society of Heating and Ventilating Engineers will hold their 1940 fall meeting October 14-15 at the Rice Hotel, Houston, Texas, according to Dr. F. E. Giesecke, president.

The South Texas Chapter will be host and six technical papers will be presented.

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Accountants Convene

The accounting section of the Wisconsin Utilities Association held its convention Sept. 16-17 at Lawsonia Hotel, Green Lake, Wis. A. P. Gale, president, Wisconsin Utilities Association, spoke on the accomplishments of the utility industry.

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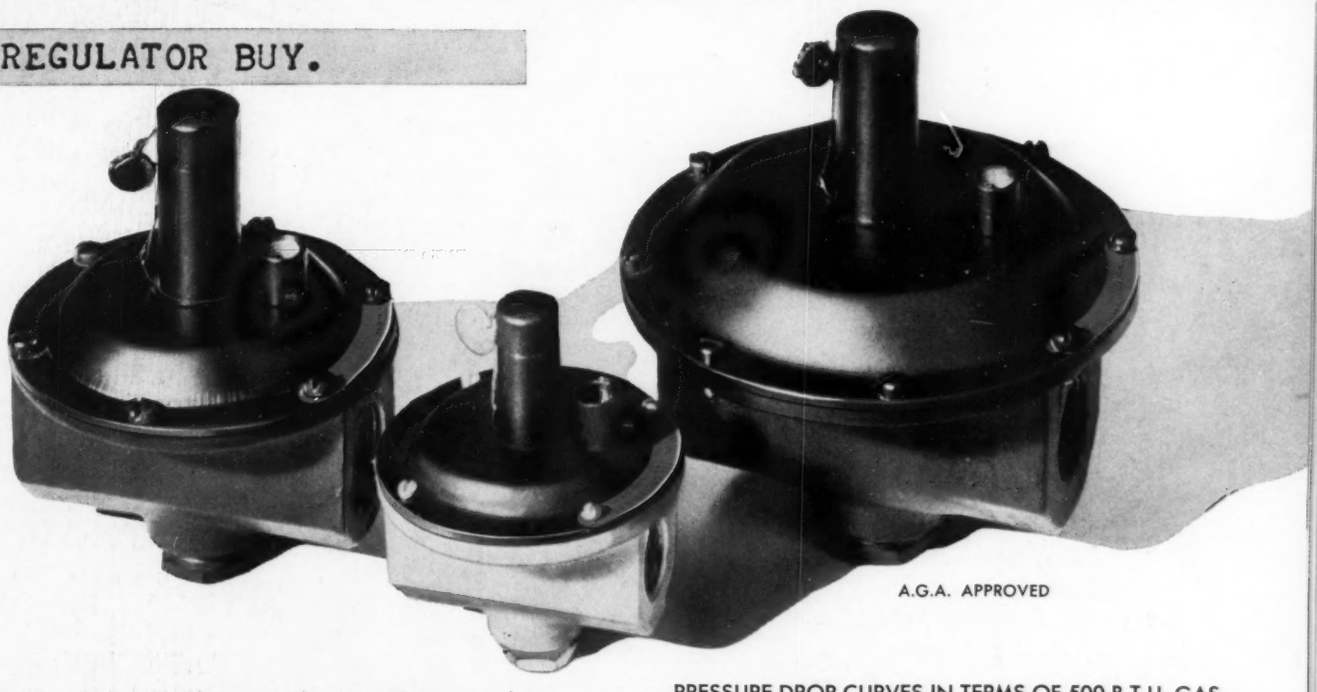

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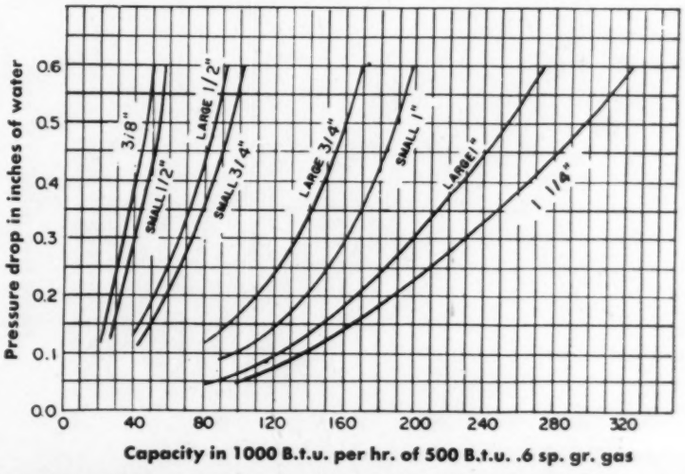

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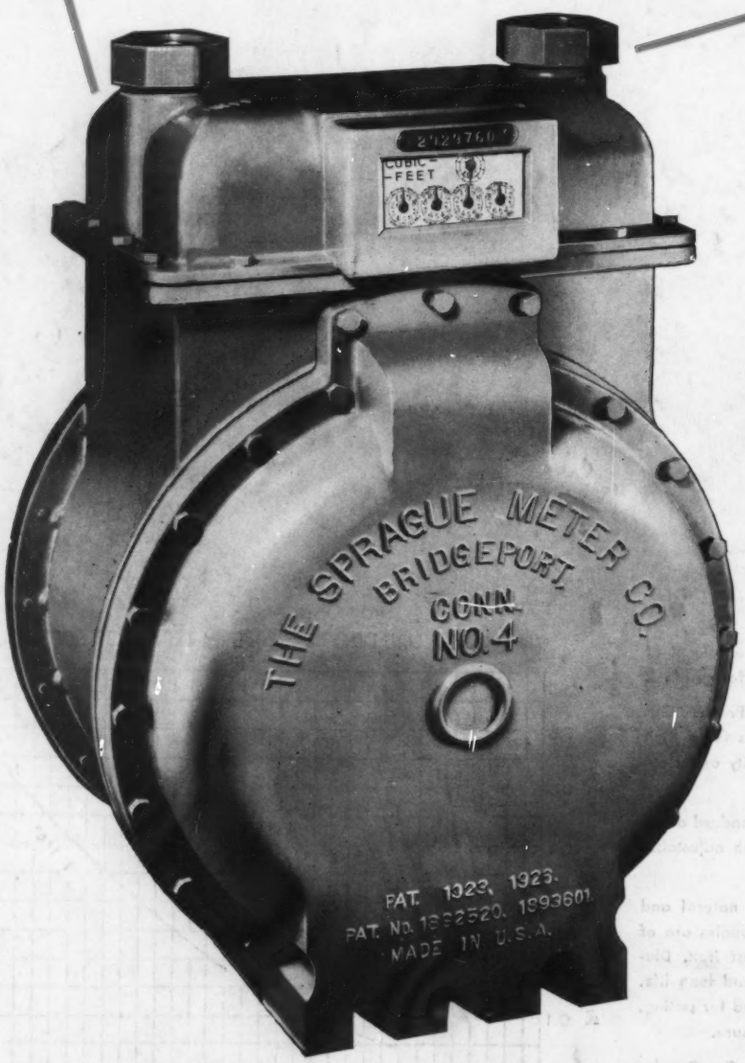

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